(No Model.)

C. E. & C. MYERS.

GUIDING APPARATUS FOR BALLOONS.

No. 318,575. Patented May 26, 1885.

Fig. 1.

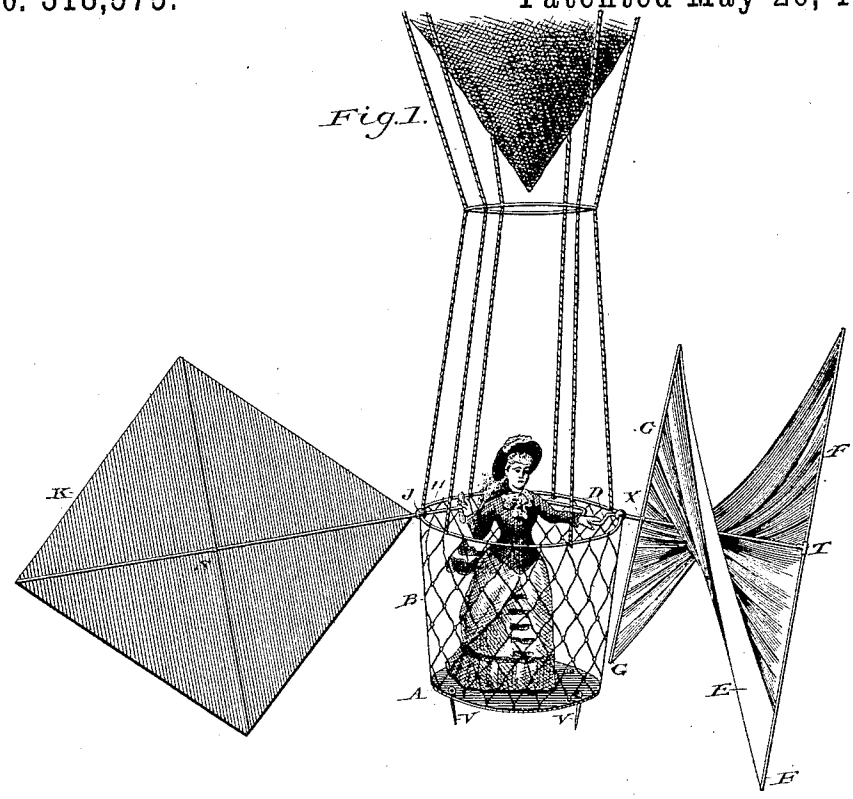
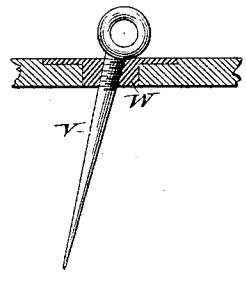


Fig. 2.



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GUIDING APPARATUS FOR BALLOONS.

SPECIFICATION forming part of Letters Patent No. 318,575, dated May 26, 1885.

Application filed December 18, 1884. (No model.)

To all whom it may concern:

Be it known that we, CARL E. MYERS, aeronautic engineer, and CARLOTTA MYERS, aeronaut, citizens of the United States, and residents of Mohawk, in the county of Herkimer and State of New York, have invented certain new and useful Improvements in Apparatus for Impelling, Directing, and Restraining the Movements of Balloons, whereby the uncertainty and danger of aerial voyaging is much decreased, of which the following is a specification.

To this end we suspend from the balloon by elastic and flexible netting a plain platform, serving as a support for the aeronaut, and also as a rudder capable of adjustment in various planes by changes in the position or weight of the aeronaut, whereby the upward or downward movements of the balloon may be diverted toward any point of the compass and its course in calm air guided in any special direction when the platform is impelled or drawn forward by rotating the screw-sail attached for propulsion. In conjunction with the platform referred to certain prongs are specially arranged to catch and hold any suitable ground on landing, so as to prevent destructive dragging.

Figure 1 exhibits the combined apparatus. A represents a platform, entirely inclosed in the flexible and elastic netting bag B, formed of hammock-twine, and whose mouth is kept expanded by attachment to the hoop H, which is suspended from the balloon by several cords. The platform A thus suspended and connected to a balloon above is of very unstable equilibrium, somewhat like a light boat on water, and tips or changes its plane or level with every different position of the aeronaut standing upon it, either through alteration of the center of gravity of the entire air-ship or through the shortening or lengthening of the meshes of the netting bag. Thus a central position of the aeronaut retains it in horizontal plane, while a step forward or to one side depresses that edge of the platform, advantage of which is taken to alter the inclination up or down of the cranked screw-shaft D, which turns in supports on the ring H. Crank-shaft D has firmly fixed upon its outer end the socket T, into which fit the two arms F F, necessary to extend the advancing edge of the screw-sail E.

At X is a socket, not fixed, but arranged to revolve around the screw-shaft D, which turns freely within it. Arms G G fit into the socket X, and serve to extend the rear edge of the screw-sail E.

In action, when the crank-shaft D is revolved, the outspread arms F F move with it and carry the attached edge of the screw-sail with them. The rear arms, G G, and the attached edge of the screw-sail lag behind by the turning of the shaft D within the socket X till the surface of the sail E assumes a twisted or helical shape by pressure of air against its after part, when the whole then revolves as a screw-sail and drags forward the balloon-car, whose sides of netting and plain platform oppose less resistance than an ordinary car would, while its unstable condition permits any desirable deviation in the horizontal plane by change in the aeronaut's position, as described.

In the course of our experiments in mid-air the kite-shaped rudder K (a square of cloth stretched upon four arms joined by a common pivot at S) was used to alter the inclination or direction of the car or balloon through movements on a universal joint, J, permitting any change of horizontal, vertical, or inclined plane, and although amply effective the kite-shaped rudder was in practice found unnecessary, the variations in plane of the platform A serving as a competent substitute. It also developed that the platform A alone was without other attachments competent to modify the direction of flight when the balloon arose, and especially to influence the direction of its fall, and that a spherical balloon having of itself no special inclination to fall in any other than a vertical line could, by aid of the platform-car alone, be so influenced or diverted in calm air as to land in any desired quarter of a considerable area below. This would be entirely impracticable with an ordinary wicker car or basket, and not at all feasible with any other than a platform-car possessing unstable equilibrium and elastic netting sides.

In use the arms G G and F F are arranged to unscrew or detach from the sockets T and X, and with the screw-shaft and folded kite-frame pack up or furl within the cloths for portability, while the elastic basket collapses for the same purpose of compact transportation.

In order to make further use of valuable peculiarities developed in the described netting basket on landing a balloon, several anchoring-spikes are arranged to be dropped through holes near the edges of the platform, and screw into sockets so arranged as to converge all of the points of the spikes toward an imaginary central spot a few feet below the platform, thus permitting the spikes to embrace or clasp a portion of the earth like converging fingers where the ground is suitable. Where ground is unsuitable for easy penetration, or when much wind is blowing, and the spikes fail to anchor by "first intention," the balloon attempts to drag the platform over the ground like a harrow; but upon the aeronaut's taking a position upon the rear portion of the platform the front end rises and slides or rides forward upon the forward spikes, whose points incline backward, while the rear spikes, whose points are inclined forward, insert themselves in the earth, and are buried deeper by forward movements of the balloon, the flexible or elastic netting sides of the car permitting this result, while an ordinary wicker-car would only be tipped over upon its stiff side and dragged helplessly along in a capsized position.

Fig. 2 shows the anchoring-spike and socket in detail, V being the spike screwed into the askew-nut W by means of the ringed head on the spike, suitable for inserting a lever, if necessary, for turning it.

We claim as our joint invention—

1. A collapsible balloon-car composed of a rudder-platform, A, surrounded by elastic netting B, suspended by an expansion-hoop, H, to which is attached a balloon by cords, and arranged to permit by changes in the aeronaut's position of such angular deviations in the level of the platform A that it may serve as a steering-rudder as well as a supporting-platform in the air, as specified.

2. In combination with a balloon and the described balloon-car A B H, the described anchoring-spikes V, fitted with skew-nuts attached to the platform A, and operating as grappling devices by convergence of the several points when inserted in earth, or as anchoring-hooks when the balloon draws the platform along the ground, as specified.

3. An aerial screw-sail composed of a crank-shaft, D, having a fixed hub, T, and loose hub X, which extend yard-arms F F G G and support a loose sail-cloth, E, so that revolutions of crank-shaft D convert sail E into a helical form by air-pressure, and create rearward-flowing currents, which may serve to elevate, depress, or deviate the course of an attached aerial body, or give it steerage-way for guidance by a rudder.

4. In combination with a balloon-car or air-ship, the kite-shaped rudder K, described and shown, composed of a square of cloth stretched upon four arms joined by a common pivot at S, and having outward extension of one arm attached to the car or air-ship, as shown, by a universal joint, J, permitting the rudder to occupy any desirable position in horizontal, vertical, or inclined plane.

5. In combination with a balloon or other aerial support, the described platform-car A B H, to the front of which is attached the described screw-sail as a draft-propeller for creating rearward-flowing currents of air, and in rear of which is attached the rudder-kite K by a universal joint, J, so that rearward-flowing currents of air may strike the rudder-kite surface at any desirable angle, horizontal or vertical.

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