No. 842,505. PATENTED JAN. 29, 1907.

P. H. UNSINGER.

CAR OF NAVIGABLE BALLOONS.

APPLICATION FILED MAR. 9, 1906.

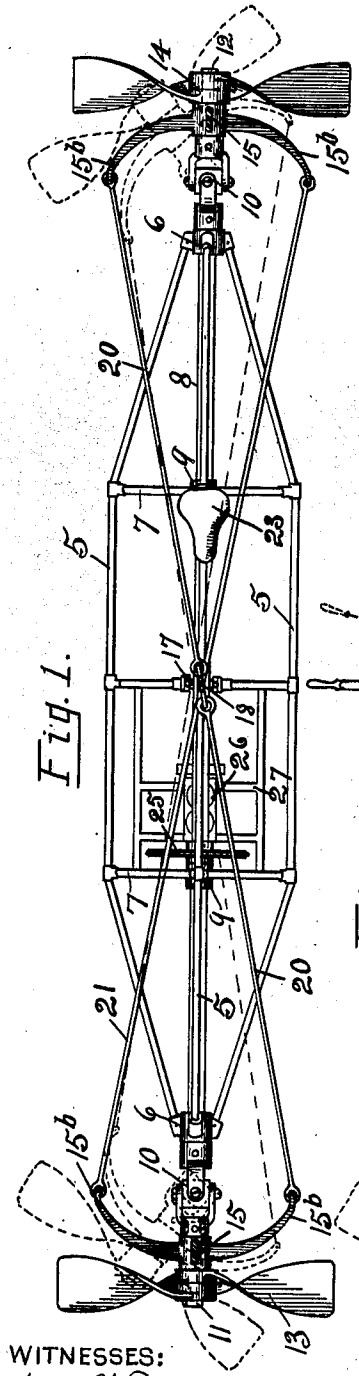


Fig. 1.

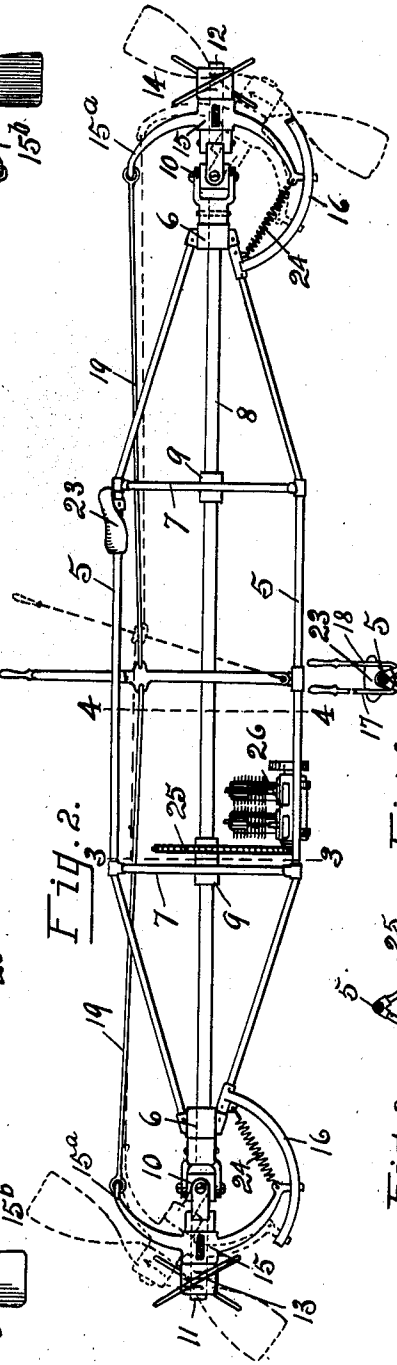


Fig. 2.

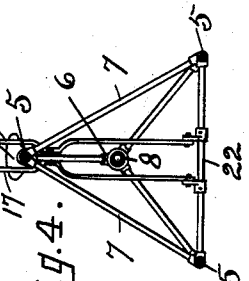


Fig. 4.

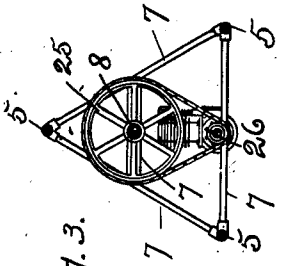


Fig. 3.

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CAR OF NAVIGABLE BALLOONS.

No. 842,505. Specification of Letters Patent. Patented Jan. 29, 1907.

Application filed March 9, 1906. Serial No. 305,151.

To all whom it may concern:

Be it known that I, PHILIP H. UNSINGER, a citizen of the United States, and a resident of Toledo, in the county of Lucas and State of Ohio, have invented certain new and useful Improvements in Cars of Navigable Balloons; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

My invention relates to navigable balloons or those fitted with some form of propelling machinery whereby the balloon is navigated and made to move to a certain extent independently of the direction and velocity of the wind.

The object of my invention is to simplify and improve upon the construction and operation of the motive and controlling means in balloons of this type whereby the movement of the balloon is more perfectly under the control and management of the operator and the balloon-body and its car maintained in substantially a level or horizontal position during a simultaneous propelling and raising or lowering movement, thus avoiding an inclination of the balloon when it is being navigated in a plane disposed at an angle to a horizontal plane.

To this end the invention consists of certain novel features of construction, combination, and arrangement of the parts, as is hereinafter fully described and which is illustrated in the accompanying drawings, in which—

Figure 1 is a top plan view of the balloon-car embodying my invention; Fig. 2, a side elevation thereof; and Figs. 3 and 4 cross-sections thereof, taken on the dotted lines 3 3 and 4 4, respectively, in Fig. 2.

Referring to the drawings, 5 represents the three longitudinal frame members or beams of the car comprising my invention. These beams are disposed in triangular relation, as shown in Figs. 3 and 4, and have their corresponding ends meeting in a bearing-bracket 6 at each end of the car and their intermediate portions spaced apart and braced by a series of transverse connecting-pieces 7, as shown. The frame members 5 and 7 are preferably formed of tubing in order to provide a light and at the same time rigid and strong construction.

Carried by the car or frame longitudinally thereof is a shaft 8, which has its ends journaled in and extending beyond the bearing-brackets 6 6 and its intermediate portion journaled in a suitable number of bearings 9, carried by the transverse pieces 7, to properly support its weight. The ends of the shaft 8 are connected by universal joints 10 to short shaft extensions 11 and 12, the former of which carries the propeller 13, having its blades positioned to pull the car, and the latter the propeller 14, having its blades positioned to push the car.

Carried on the shaft extension with each propeller is a four-armed spider 15, which has the end of its lower vertical arm mounted for movement in a slotted segmental guiding-arm 16, one of which guiding-arms is disposed at each end of the frame or car, as shown. Vertical and horizontal oscillatory movements are imparted to the two propellers by the operation of the levers 17 and 18, respectively, the former of which is connected with the upper vertical arm 15^a of each spider through the medium of the rods 19, thus causing a movement of the lever to effect opposite oscillations of the two propellers, or, in other words, maintain them in constant parallelism whatever may be the angles of the shaft extensions relative to the major portion of the shaft, as shown by dotted lines in Fig. 2. The latter lever 18 instead of connecting with corresponding arms of the two spiders, as does the lever 17, connects with the reverse horizontal arms 15^b thereof through the diagonally-disposed connecting-rods 20, while the other two horizontal arms of the spiders are connected by the single rod 21, thus causing a movement of the lever to effect corresponding horizontal oscillations to the two propellers, as shown by dotted lines in Fig. 1. The levers 17 and 18 are pivoted at their lower ends to a cross-piece 22 of the frame and project above the top member 5 of the frame in advance of the operator's seat 23, which is shown as being carried by said upper frame member. Coiled contraction-springs 24 24 normally tend to draw the lower vertical arms of the spiders 15 inwardly toward the car or frame. A sprocket-wheel 25 is carried by the shaft 8 and is driven by an engine, motor, or other suitable power-energizing means 26, which

is mounted on a supplemental frame or platform 27, suitably secured to the base of the frame or car. It will be apparent with this manner of controlling the movements of the balloon that when it is desired to cause the balloon to take a course at an angle to a horizontal plane for the purpose of ascending or descending, the lever 17 is moved sufficiently in the proper direction to cause the axes of the propellers to both assume the plane in which it is desired to move.

The adjustment of the two propellers in opposite directions relative to the shaft 8 causes the forward end of the car to be pulled and the rear end thereof to be pushed upwardly or downwardly, as the case may be, by equal propelling forces, so that the car maintains a level position during an ascending or descending movement.

When it is desired to turn the balloon or cause it to move in a circle, the lever 18 is moved in the proper direction and the propellers thereby caused to take positions on the same side of the shaft 8, one of which levers acts to pull the forward end of the car around and the other to push the rear end around, thus making it possible to describe a much shorter turn than would be the case were only one propeller used. It is also possible by reason of the swivel or universal movement of the shaft extensions to cause them, by proper manipulation of the two levers, to describe circles around the normal or straight positions thereof, whereof the axes of the propellers may assume positions at angles both to horizontal and vertical planes, so that the balloon may be caused to move laterally at the same time it is ascending or descending.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a balloon-car, a horizontal shaft having its ends projecting beyond the car ends and provided with extensions having a swivel movement relative thereto, a propeller carried by each extension, controlling means having connection with the extensions for causing opposite angular adjustments thereof relative to the shaft, and means for driving the shaft.

2. In a balloon-car, a propeller-shaft having universally-adjustable extensions at each end, a propeller on each extension, and means for imparting an angular circular adjustment to the extensions whereby the extensions may be swung to all points within the arc of a circle having the shaft as an axis.

3. In a balloon-car, a propeller-shaft having its ends formed with universally-movable extensions, means for driving the shaft, a propeller carried by each extension, and means for imparting adjustment to the shaft extensions whereby their axes are disposed at angles to the major portion of the shaft and lie in substantially parallel planes.

4. In a balloon-car, a propeller-shaft having its ends formed with universally-movable extensions, means for driving the shaft, a propeller carried by each shaft extension, and mechanism for imparting both an opposite and a corresponding angular adjustment of the extensions relative to the shaft.

5. In a balloon-car, a propeller-shaft having its ends provided with universally-adjustable extensions, means for driving the shaft, a propeller carried by each extension, means for causing the shaft extensions to assume corresponding positions laterally of the shaft, and means for causing the extensions to assume opposite positions vertically of the shaft.

6. In a balloon-car, a propeller-shaft having its ends provided with universally-connected extensions, means for propelling the shaft, a spider and a propeller carried by each extension, and controller means connecting the two spiders adapted to impart horizontal oscillation simultaneously to each.

7. In a balloon-car, a propeller-shaft having its ends provided with universally-adjustable extensions, means for driving the shaft, a spider and a propeller carried by each extension, means connecting the horizontal arms of the two spiders for imparting corresponding movements to the two extensions, and means connecting the vertical arms of the spiders for imparting opposite movements thereto.

8. In a balloon-car, a propeller-shaft having its ends universally adjustable relative to its major portion, means for driving the shaft, a spider and a propeller carried by each adjustable shaft end, a segmental guiding member for the lower spider-arm, means connecting the upper arm of each spider for imparting opposite vertical adjustments to the propellers, and means connecting the reverse horizontal arms of the spiders for imparting corresponding oscillations to the propellers.

In testimony whereof I have hereunto signed this specification in the presence of two subscribing witnesses.

PHILIP H. UNSINGER.

Witnesses:
C. W. OWEN,
CORNELL SCHREIBER.