

E. B. RAYNER.

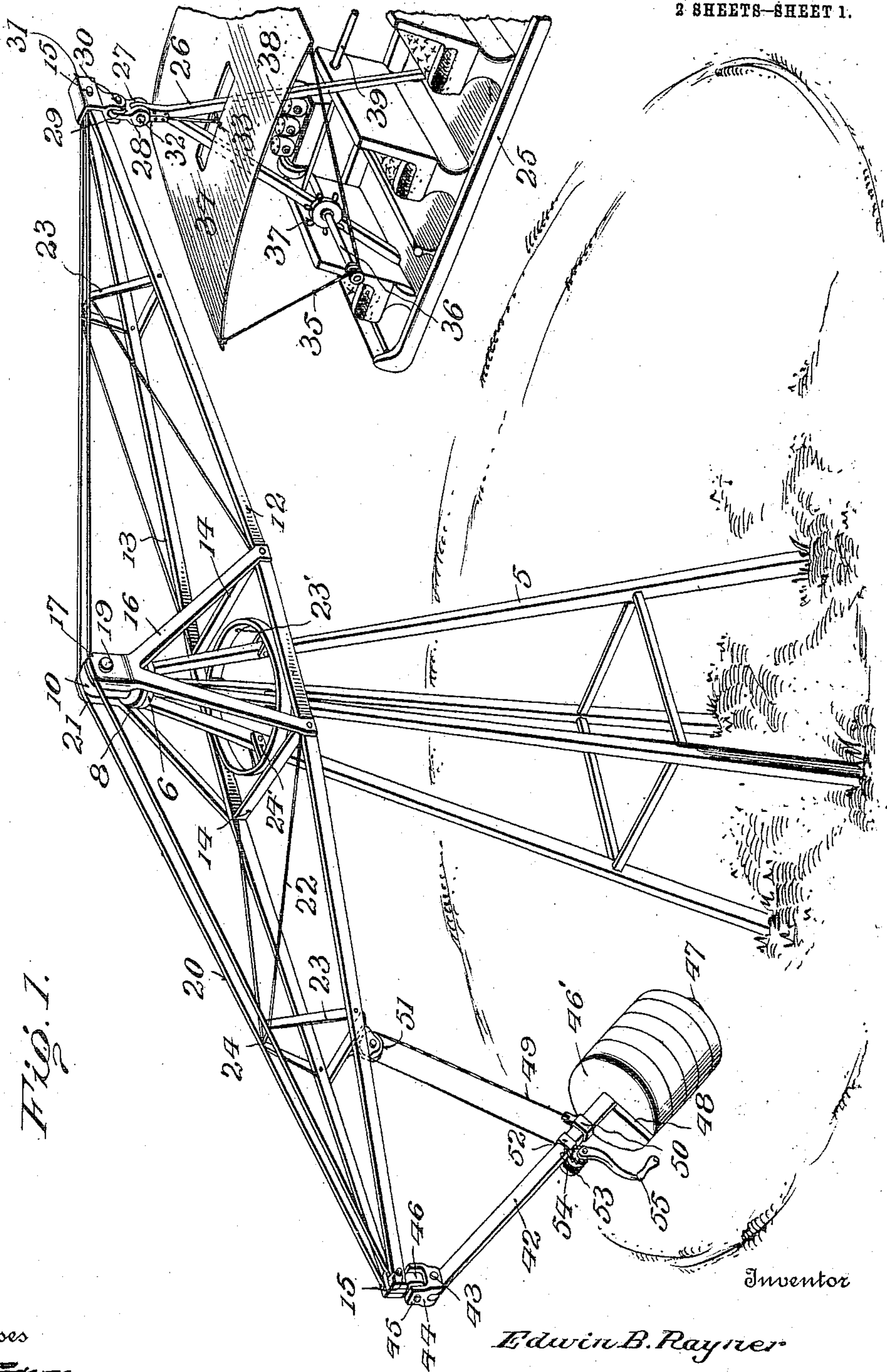
ROUNDAABOUT.

APPLICATION FILED DEC. 10, 1909.

982,993.

Patented Jan. 31, 1911.

2 SHEETS-SHEET 1.



Witnesses
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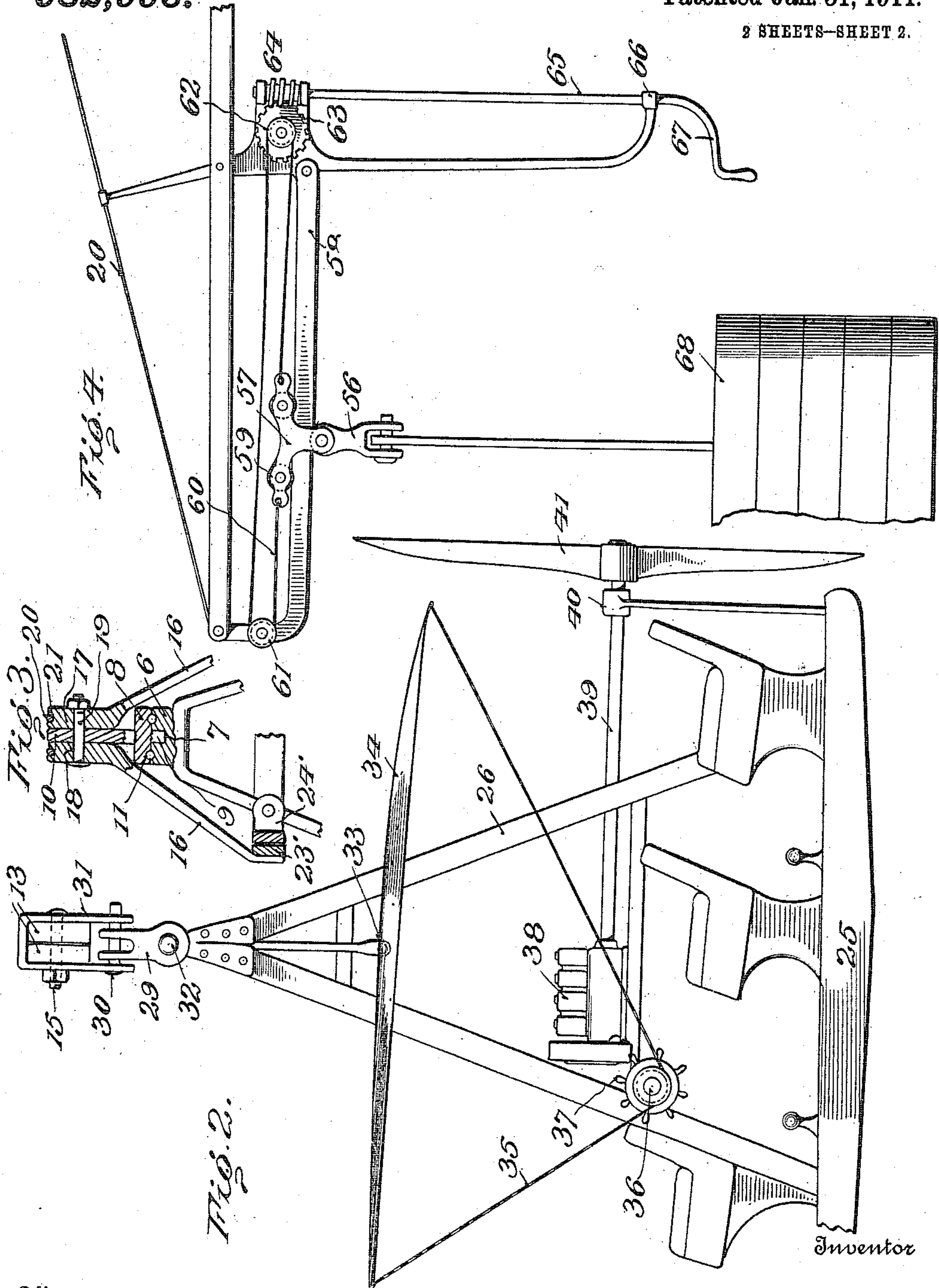
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UNITED STATES PATENT OFFICE.

EDWIN B. RAYNER, OF PIQUA, OHIO.

ROUNABOUT.

982,993.

Specification of Letters Patent.

Patented Jan. 31, 1911.

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To all whom it may concern:

Be it known that I, EDWIN B. RAYNER, a citizen of the United States, residing at Piqua, in the county of Miami and State of Ohio, have invented certain new and useful Improvements in Roundabouts, of which the following is a specification.

This invention relates to amusement devices and more particularly to a captive flying machine especially designed for erection at summer resorts, parks and other places, and by means of which a person riding in the same may experience all of the sensations incident to a trip on a real flying machine without the usual danger attendant thereon.

The object of the invention is to provide a flying machine, the construction of which is such that its flight, while free, within a predetermined limit, is confined to a certain course, thus preventing the machine from escaping or falling, while at the same time allowing all of the maneuvers of a real airship in actual flight.

Further objects and advantages will appear in the following description, it being understood that various changes in form, proportions and minor details of construction may be resorted to within the scope of the appended claims.

For a full understanding of the invention and the merits thereof and also to acquire a knowledge of the details of construction and the means for effecting the result, reference is to be had to the following description and accompanying drawings, in which:

Figure 1 is a perspective view of a captive flying machine constructed in accordance with my invention; Fig. 2 is a side elevation of the flying machine or air-ship showing the manner of suspending the same from one end of the cantaliver; Fig. 3 is a detail vertical sectional view of the upper end of the derrick or support showing the manner of mounting the cantaliver thereon; Fig. 4 is a side elevation illustrating a modified form of counterpoise.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

The device comprises a suitable support, preferably in the form of a derrick 5 having its upper end provided with a station-

ary bearing plate 6 in which is formed a centrally disposed socket 7. Mounted for rotation on the stationary bearing plate 6, is a movable bearing plate 8 having its lower end provided with a depending pin 9 which enters the socket 7, and its upper end provided with a vertically disposed lug 10, there being anti-friction balls 11 interposed between the plates 6 and 8 for the purpose of reducing friction between the parts, as shown.

Pivotally mounted for rotary movement on the derrick or support 5, is a cantaliver 12, the latter being preferably formed of longitudinally disposed side bars 13 having their intermediate portions spaced apart by transverse struts or braces 14, and their opposite ends brought together and bolted or otherwise fastened at 15.

Extending upwardly from the side bars 13 at or near the struts or braces 14, are supporting arms 16, the free ends of which are inclined inwardly and thence bent upwardly to form spaced ears 17 adapted to receive between them the lug 10, there being alined perforations 18 formed in the ears 17 and lug 10 for the reception of a pivot pin or bolt 19.

The cantaliver 12 is reinforced and strengthened by the provision of suitable guy rods 20, the opposite ends of which are anchored in any suitable manner to the side bars 13 at their points of juncture, while the intermediate portions of the guy rods 20 are seated in suitable grooves 21 formed in the upper ends of the ears 17. The cantaliver is also preferably reinforced and strengthened by the provision of inclined braces 22, which latter extend from the adjacent struts 14 to upright braces 23 disposed near the opposite ends of said cantaliver, there being guiding grooves 24 formed in the upright braces 23 for engagement with the adjacent guy rods 20.

Surrounding the upper end of the derrick 5 below the stationary bearing plate, is a guiding ring 23', the outer edge of which bears lightly against the end bar of the cantaliver between the struts 14 and serves to prevent lateral swaying of said cantaliver. The guide ring 23' may be secured to the derrick in any suitable manner, but it is preferred to provide the ring with inwardly extending lugs 24', which latter embrace the adjacent inclined bar of the der-

rick and to which they are rigidly secured by bolts or similar fastening devices, as shown.

Suspended from one end of the cantaliver 5 is an air-ship or flying machine of any suitable construction, it being preferred however to provide a flying machine of the construction shown in Fig. 1 of the drawings. The air-ship comprises a car 25 having converging suspension straps 26 secured thereto and provided at their upper ends with an eye 27, which latter fits between the spaced ears 28 of a clip 29. The clip 29 is pivotally mounted at 30 in a depending supporting bracket 31 secured to the adjacent end of the cantaliver 12, preferably by the bolt or fastening device 15. It will be noted that the pivot pins 30 and 32 are disposed at substantially right angles to each other so as to form in effect a universal joint between the air-ship and cantaliver, and thus permit said air-ship to swing laterally in any direction when the machine is in operation.

Pivotally mounted at 33 is a lifting plane 34 having ropes or cables 35 secured to the opposite ends thereof and passing over a winding shaft 36 journaled in suitable bearings on the car 25, as shown. The shaft 36 is provided with a hand wheel 37 so that by rotating the latter, the lifting plane 34 may be tilted at any angle or inclination with respect to the bottom of the car, thus to direct the flight of the air-ship.

A motor 38 of any suitable construction is mounted on the car 25, the driving shaft 39 of which is journaled in a suitable bearing 40 and is provided with a terminal propeller 41 for operating the device.

Suspended from that end of the cantaliver opposite the air-ship, is a counterpoise, the latter being preferably in the form of a bar 42 having its upper end pivotally mounted at 43 in a clip 44, which in turn is pivotally mounted at 45 on a bracket 46 depending from the adjacent end of said cantaliver. A series of detachable weights 46 are carried by the bar 42, the lower one of which rests on the enlarged end 47 of the bar 42, said weights being provided with slots 48 so that said weights may be readily removed from or positioned on said bar 42 to counterbalance the weight of the occupants in the car 25. As a means for adjusting the counterpoise, there is provided a cable 49, one end of which is secured to a clip 50 on the bar 42, while the other end thereof passes over a pulley 51, suspended from the cantaliver for attachment to a similar clip 52 fastened on the bar 42 above the clip 50. The clip 52 is provided with laterally extending arms between which is journaled a winding drum 53 over which passes the adjacent end of the cable 49, there being a pawl and ratchet mechanism 54

mounted on the clip 52 for preventing rearward rotation of the winding drum 53. Thus it will be seen that by rotating the handle 55, the cable 49 may be lengthened or shortened so as to govern the position of the counterpoise and thus cause the latter to equally balance the flying machine 25.

In operation, the motor 38 is started which causes the propeller 41 to rotate and thus impart a rotary movement to the cantaliver. As the cantaliver revolves, the latter is free to move in a vertical plane on the pivot 19 when the angle or inclination of the lifting plane 34 is changed by the operator. Attention is here called to the fact that a straight line drawn from the pivotal connection between the flying machine and lever 12 to the pivotal connection between the counterpoise and lever passes below the pivotal connection of the cantaliver with the lug 10 so that any vertical movement of the flying machine will encounter resistance whether ascending or descending.

In Fig. 4 of the drawings, there is illustrated a modified form of the invention in which the counterpoise, instead of being adjusted to angular positions with respect to the cantaliver, is suspended from a clip 56, which latter is in turn connected with a carriage 57 mounted on a track 58, said carriage being provided with oppositely disposed rollers 59 and having a cable 60 secured to one end thereof and passing over idle rollers 61 and 62, as best shown in Fig. 4 of the drawings. A worm gear 63 is secured to the shaft of the roller 62 for engagement with a worm 64, the latter being provided with a depending shaft 65 having its lower end journaled in a bearing 66 and provided with a terminal handle 67 by means of which the worm may be rotated so as to move the carriage 57 on the track 58 and thus govern the position of the counterpoise 68. It is to be understood that the term "air-ship" is used in its broad sense and is intended to cover aeroplanes, helicopters, orthopters and all other types of flying machine.

Having thus described the invention, what is claimed as new is:

1. An amusement device including a support having a stationary bearing plate secured to the upper end thereof, a guide ring secured to the support below the bearing plate a movable bearing plate journaled on the stationary bearing plate and provided with a vertically disposed lug, a lever including longitudinally disposed bars having their opposite ends connected and their intermediate portions spaced apart, and bearing lightly against the guide rings arms projecting from the longitudinal bars and provided with ears adapted to engage the lug, a pivot pin extended through the ears and lugs, an air-ship depending from and

having a universal connection with one end of the lever, and a counterpoise pivotally connected with the other end of said lever.

2. An amusement device including a support having a stationary bearing plate and provided with a guide ring, a movable bearing plate engaging the stationary bearing plate and provided with a vertically disposed lug, a lever including longitudinal bars having their opposite ends united and their intermediate portions bearing against the guide ring, arms projecting upwardly from the longitudinal bars of the lever and provided with vertically disposed ears having seating grooves formed therein, a pivot pin extending through the ears and lugs respectively, guy rods secured to the opposite ends of the lever and having their intermediate portions seated in said grooves, an air-ship suspended from and pivotally connected with one end of the lever, and a counterpoise suspended from the other end of said lever.

3. An amusement device including a support, a lever having spaced upwardly extending arms pivotally connected with the support and free to rotate with the lever on said support, an air-ship suspended from one end of the lever, a swinging counterpoise depending from the other end of the lever, and means for adjusting the counterpoise with respect to said lever.

4. An amusement device including a support, a lever pivotally mounted for rotation on the support, an air-ship suspended from one end of the lever, a bar pivotally connected with the other end of the lever and having a plurality of weights removably mounted thereon, a winding drum carried by the bar, a pulley suspended from the lever and a flexible connection between the winding drum and pulley for changing the angular position of the bar with respect to the lever.

5. An amusement device including a support, a lever pivotally mounted for rotary movement on the support, a bracket depending from one end of the lever, a clip pivot-

ally connected with the bracket, an air-ship having a hanger pivotally connected with the clip, the pivot pins of the bracket and hanger of the air-ship being disposed at right angles to each other, a clip depending from the other end of the lever, a bar pivotally mounted in said clip and provided with a plurality of removable weights, a winding drum journaled on the bar, a pulley suspended from the lever, and a flexible connection between the winding drum and pulley for changing the angular position of the bar with respect to said lever.

6. An amusement device including a support, a guide ring secured to the support, a lever pivotally mounted for rotary movement on the support and bearing lightly against the guide ring, an air-ship suspended from one end of the lever, and a counterpoise connected with the other end of said lever.

7. An amusement device including a support, a guide ring surrounding the support and provided with inwardly extending lugs for rigid attachment to said support, a lever pivotally mounted for rotary movement on the upper end of the support and having spaced side bars bearing lightly against the guide ring, an air-ship suspended from one end of the lever, and a counterpoise connected with the other end of said lever.

8. An amusement device comprising a support, a lever pivotally mounted on the support and including spaced longitudinal bars, a guide ring secured to the support beneath the pivotal axis of the lever and bearing against the longitudinal bars of said lever, a flying machine suspended from one end of the lever, and a counterpoise connected with the other end of said lever.

In testimony whereof I affix my signature in presence of two witnesses.

EDWIN B. RAYNER. [L. s.]

Witnesses:

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