

No. 864,317.

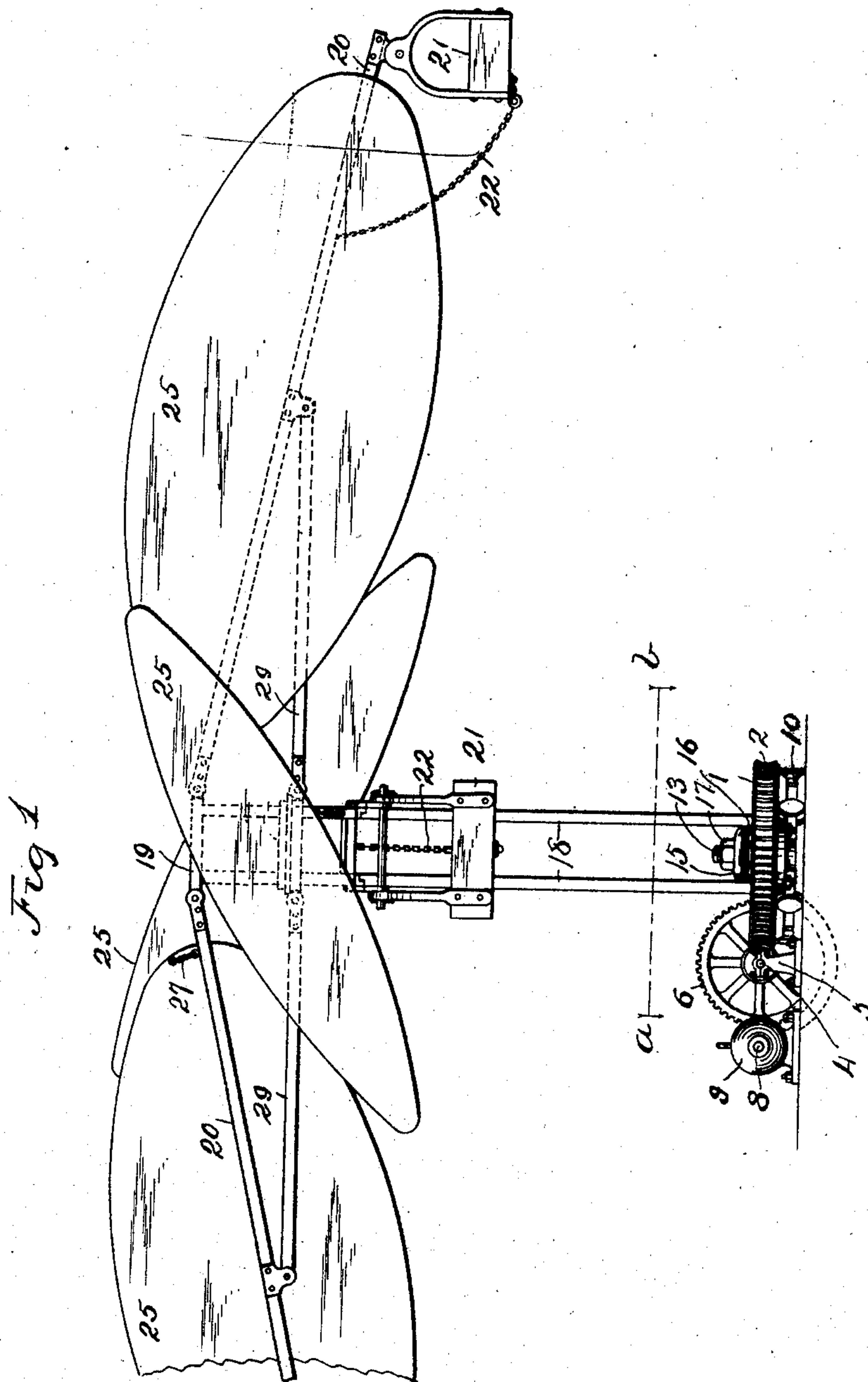
PATENTED AUG. 27, 1907.

H. A. LOCKWOOD.

AIR WHEEL.

APPLICATION FILED JAN. 3, 1905.

4 SHEETS—SHEET 1.



Witnesses

W. A. Fingle.
Max Boungen.

H. A. Lockwood ^{Inventor}

Warren D. House

His Attorney

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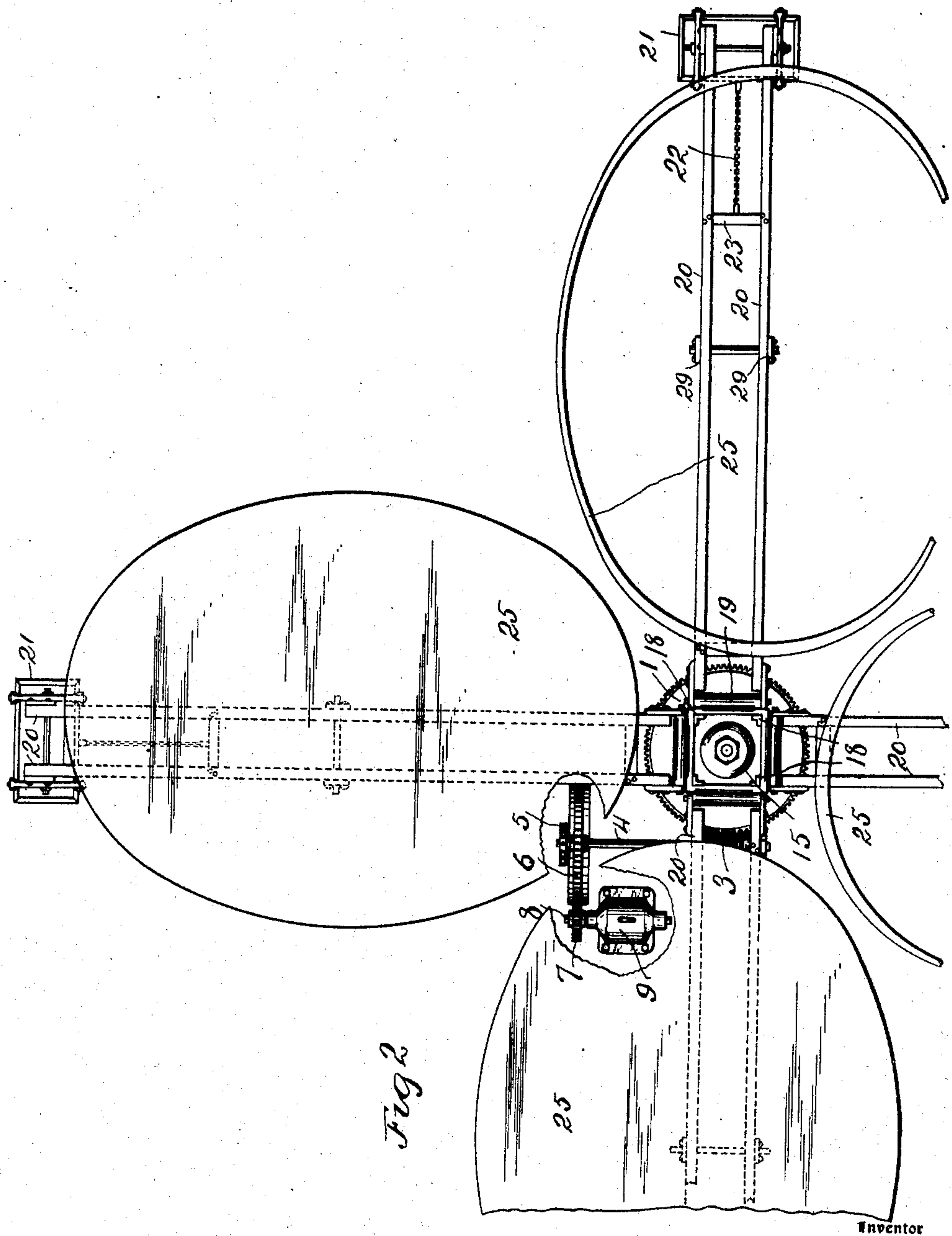
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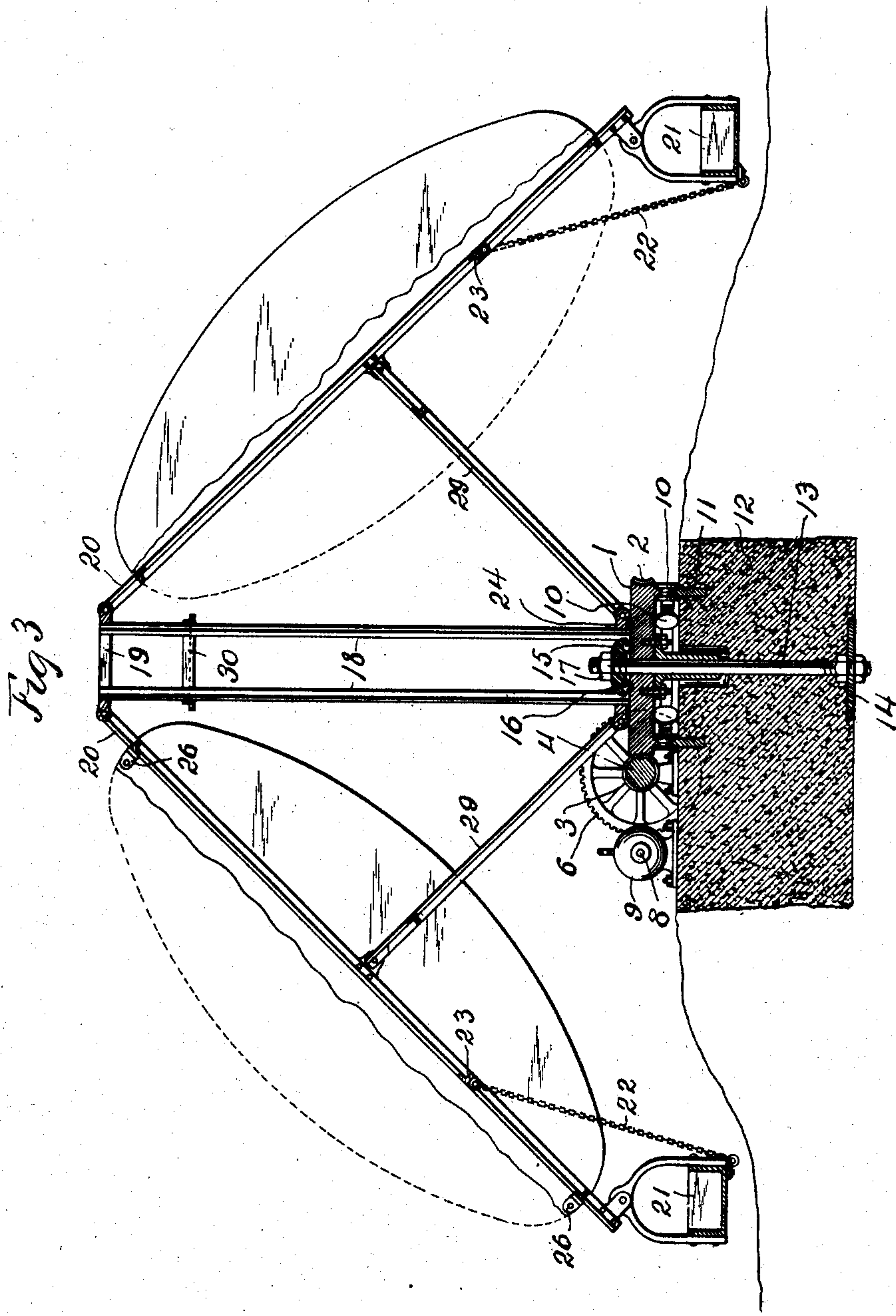
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4 SHEETS—SHEET 4.

Fig 4

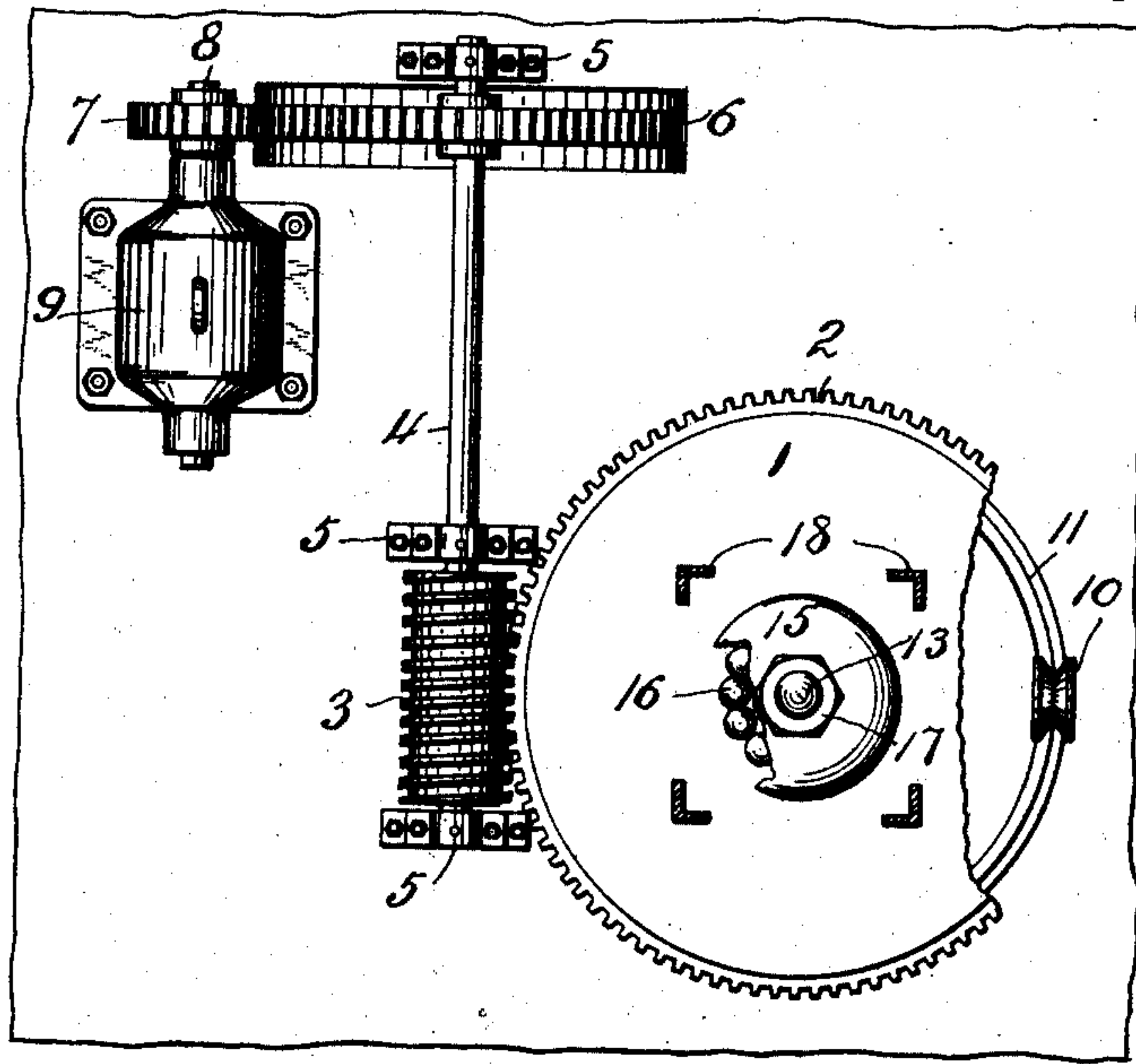


Fig 5

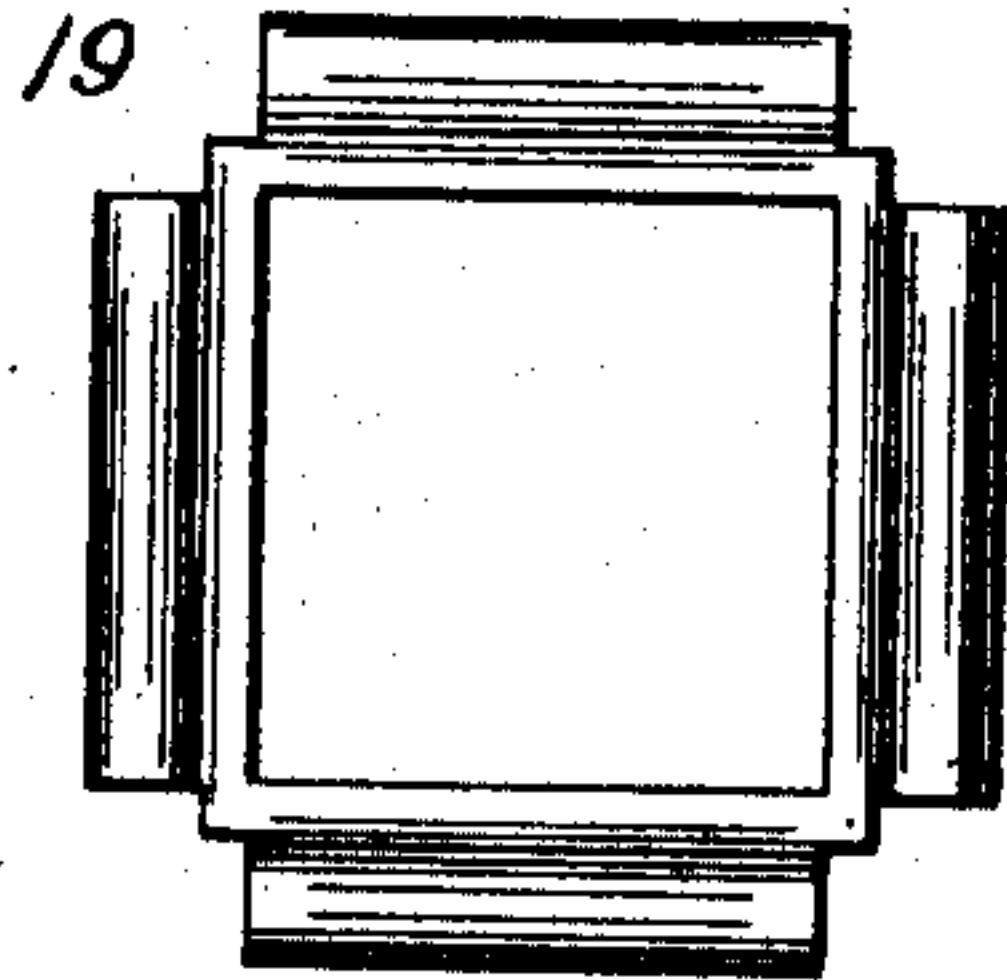


Fig 6

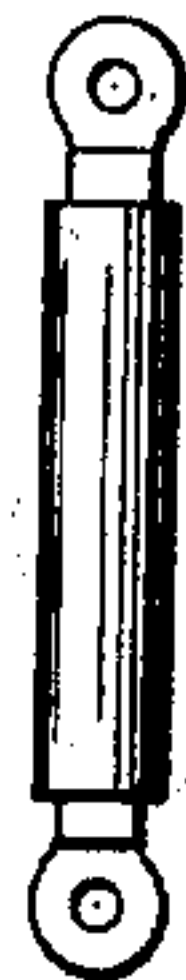


Fig 8

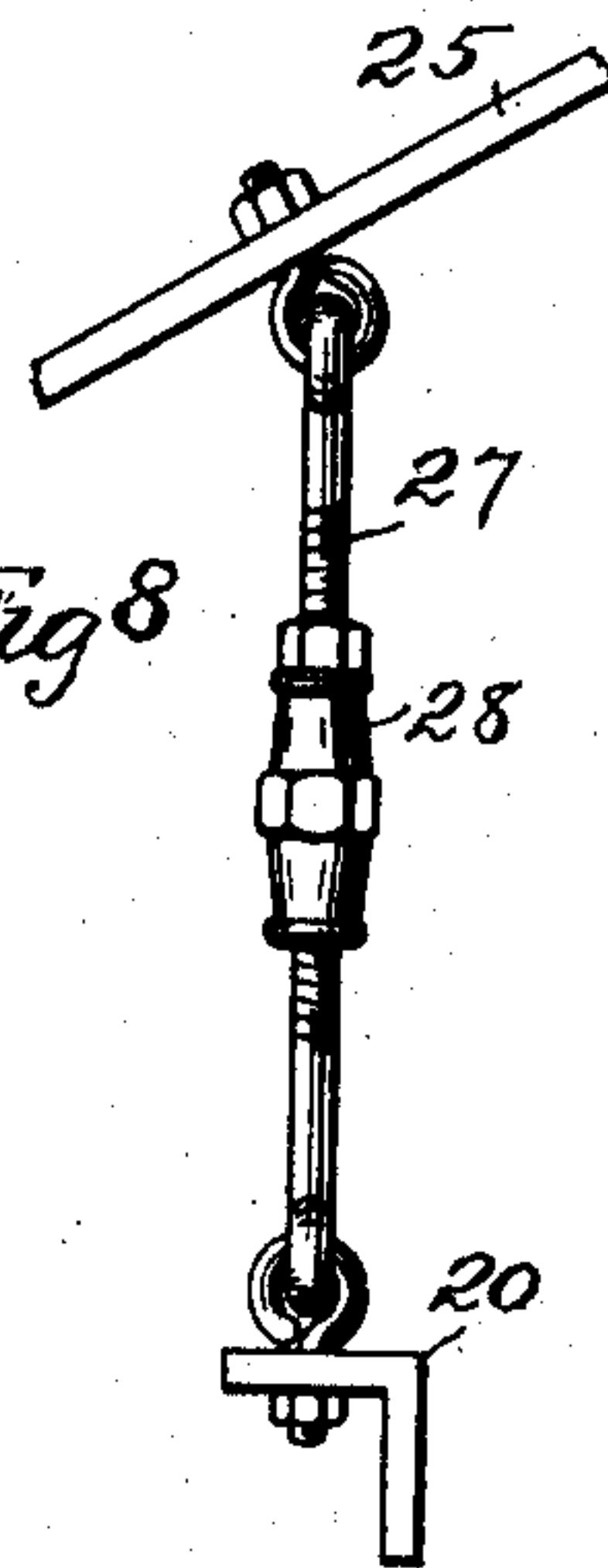
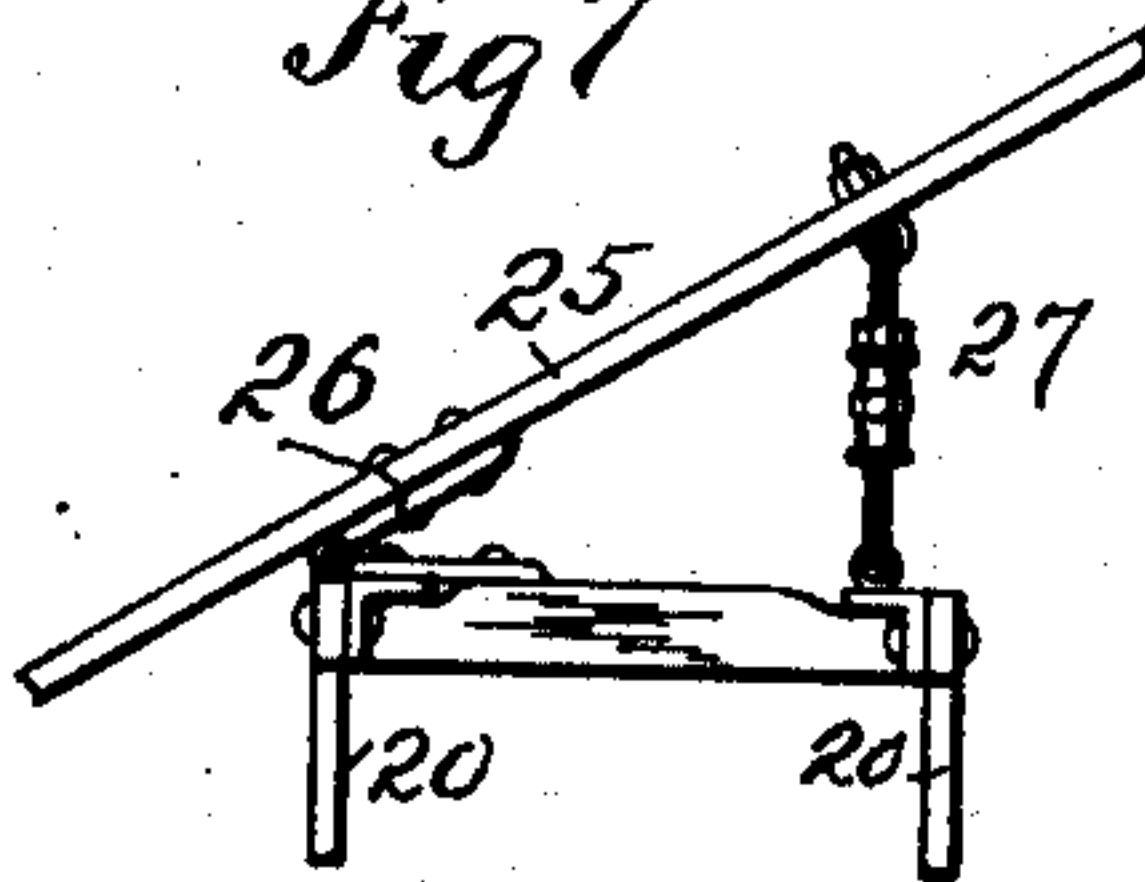


Fig 7



Witnesses

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UNITED STATES PATENT OFFICE.

HORACE A. LOCKWOOD, OF KANSAS CITY, MISSOURI.

AIR-WHEEL.

No. 864,317.

Specification of Letters Patent.

Patented Aug. 27, 1907.

Application filed January 3, 1905. Serial No. 239,300.

To all whom it may concern:

Be it known that I, HORACE A. LOCKWOOD, a citizen of the United States, residing at Kansas City, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Air-Wheels, of which the following is a specification.

My invention relates to improvements in air wheels, designed for pleasure purposes.

My invention provides a rotary support having one or more vertically movable members, each having a car suspended therefrom and adapted each to carry one or more persons, each member carrying an obliquely disposed aero plane by means of which, when the support is rotated, the aero planes will by their resistance to the air and by reason of their inclination, cause the car supporting members to rise and soar through the air like a bird on the wing. In the event of certain accidents, such as a sudden stopping of the rotation of the support, the aero planes will prevent a too sudden descent of the car supporting members.

My invention provides further, a novel means for changing the inclination of each aero plane and firmly securing it in the position to which it may be adjusted.

My invention provides further, adjustable means by which the vertical movement of the cars may be limited.

My invention provides further, novel means for imparting rotation to the car supporting mechanism.

Other novel features of my invention are hereinafter fully described and claimed.

Referring to the drawings illustrating my invention—Figure 1 is a side elevation view showing the arms in the raised position, one of the arms and parts connected therewith being broken away. Fig. 2 is a plan view, some of the parts being broken away. Fig. 3 is a vertical sectional view, showing two cars and their supporting arms, the arms being in the lowered position and each aero plane being partly broken away. Fig. 4 is a horizontal sectional view, taken on the dotted line *a—b* of Fig. 1. Fig. 5 is a plan view of the top plate of the supporting frame. Fig. 6 is a side elevation view of the top plate 19 stood edgewise. Fig. 7 is an end view of one of the arms and a portion of the aero plane attached thereto. Fig. 8 is an enlarged view in elevation of one of the turn buckles and parts connected therewith.

In its preferable form my invention provides a horizontal rotary base 1, provided with peripheral teeth 2 adapted to engage the threaded portion 3 of a horizontal shaft 4, rotatively mounted in vertical bearings 5 and having secured rigidly to it a spur gear wheel 6, which meshes with a pinion 7 mounted on the horizontal armature shaft 8, of an electric motor 9. The base 1 is mounted upon a series of rollers 10, mounted respectively on a circular run-way 11, horizontally supported upon a bed of concrete 12. The base 1 is retained from

vertical movement by means of an anchor comprising a vertical bar 13, which extends into the concrete bed 12, and has secured to its lower end a horizontal plate 14, and to its upper end, above the base 1, having mounted on it a horizontal plate 15, disposed concentrically with the base 1, and having interposed between it and the said base a series of balls 16, upon which the plate 15 rests and which in turn rest in an annular groove provided in the upper side of the base 1. The upper end of the bar 13 is screw threaded and has mounted upon it a lock nut 17 which bears upon the upper side of the plate 15.

A supporting frame comprising four parallel angle-iron bars 18, having their lower ends secured to the top of the base 1, and extending vertically upward therefrom and a horizontal top plate 19 to which the upper ends of the bars 18 are secured. To the plate 19 are secured one or more vertically movable members comprising preferably each an arm composed of two parallel bars 20, pivoted at their respective upper ends to the plate 19, each pair of bars 20 forming one of said arms, having pivotally supported at its outer end a swinging car 21, adapted to contain one or more occupants. A flexible member comprising preferably a chain 22, is secured at one end to each car 21 and at its other end to the adjacent arm supporting the said car. As many chains are provided as there are car supporting arms, the chains 22 being secured respectively at their upper ends to transverse bars 23, connected respectively, each at its ends, to each pair of bars 20. Vertically slidable upon the bars 18, is a rectangular runner plate 24 having a central hole in which are located the bars 18. One or more aero planes 25, are mounted one upon each of the arms 20. The said aero planes may be of any desired form and are pivoted respectively, by means of its ends, by hinges 26, to one of the adjacent bars of the arms 20 supporting it. One or more turn-buckles 27, of the ordinary form, are pivotally connected each at its upper end, to one of the aero planes 25, and at its lower end to the opposite bar of the arm 20, to the one on which the aero plane is pivoted by the hinge 26. By properly rotating the sleeve 28 of each turn buckle upon the right and left threaded bars which the sleeve 28 connects, and which form with it the turn-buckle, the inclination of the aero plane to which the turn buckle is attached may be varied. The aero planes 25 are inclined at an angle to the plane of rotation of the arms 20, the direction of inclination being such that when the supporting frame and the arms 20 are revolved, the air pressure upon the lower side of the aero planes will lift the said aero planes and the arms 20, thus imparting a soaring movement to the cars 21. One or more braces 29 are pivotally connected at their outer ends, one to each arm 20 and at their inner ends pivotally connected each to the runner 24. Upon the bars

18 above the runner 24, is a vertically adjustable rectangular plate 30, secured to the bars 18, which serves to limit the upward movement of the runner 24.

In operating my invention, the motor shaft 8 is caused to rotate in the proper direction, thus revolving the supporting frame through the intermediacy of the pinion 7, gear 6, shaft 4, worm 3, and base 1. The arms 20 and cars 21, together with the aero planes 25, will thus be caused to revolve. The aero planes, combined with centrifugal force, will cause the arms 20 to swing upwardly, thus elevating the cars 21 and sliding the runner 24 upwardly through the intermediacy of the braces 29. When sufficient rapidity of revolution has been obtained, the runner 24 will strike against the plate 30, thus retaining the cars 21 in the horizontal plane to which they have ascended.

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

1. The combination with a rotary support having a vertically movable car supporting member carried thereby, of a car suspended from said member, and an aeroplane mounted on said member in a position inclined to the plane of movement of said member.

2. The combination with a rotary support having a plurality of vertically movable car supporting members carried thereby, of a plurality of cars suspended one from each member, and a plurality of aeroplanes mounted obliquely one on each member.

3. The combination with a rotary support having a movable car supporting member mounted thereon so as to swing vertically, of an aeroplane mounted obliquely on said member.

4. The combination with a rotary support having a plurality of movable car supporting members, mounted thereon so as to swing vertically, of a plurality of aeroplanes mounted obliquely one on each of said members.

5. The combination with a rotary support having an arm pivoted at its upper end thereto, a car suspended so as to swing radially on said arm, and an aeroplane mounted obliquely on said arm.

6. The combination with a rotary support having a plurality of arms pivoted each at its upper end thereto, cars suspended so as to swing radially one on each arm, and a plurality of aeroplanes mounted obliquely one on each of said arms.

7. The combination with a rotary support having a vertically movable member mounted thereon, of a car suspended from said member, an aeroplane mounted obliquely on said member, and means for rotating said support.

8. The combination with a rotary support having a plurality of vertically movable members, of a plurality of cars suspended one from each member, a plurality of aeroplanes mounted obliquely one on each member, and means for rotating said support.

9. The combination with a rotary support having an arm pivoted thereon so as to swing vertically, of a car suspended from said arm, and an aeroplane mounted obliquely on said arm.

10. The combination with a rotary support having a plurality of vertically movable arms pivoted thereto, of a plurality of cars suspended one from each of said arms, and a plurality of aeroplanes mounted obliquely one on each of said arms.

11. The combination with a rotary support having one or more vertically movable arms, of one or more cars suspended one from each arm, one or more aeroplanes mounted obliquely one on each arm, and means for rotating said support.

12. The combination with a rotary support having one or more arms pivoted each at its upper end to said support, of one or more cars swinging one from each arm, and one or more aeroplanes mounted obliquely one on each arm.

13. The combination with a rotary support having one or more arms pivoted each at its upper end to said support, of one or more cars swinging one from each arm, one

or more aeroplanes mounted obliquely one on each arm, and means for rotating said support.

14. The combination with a rotary support having one or more members vertically movable upon said support, of means for limiting the vertical movement of said members, one or more cars suspended one from each member, and one or more aeroplanes mounted obliquely one on each of said members.

15. The combination with a rotary support having one or more arms hinged thereto, of a runner vertically movable on said support, one or more braces connecting each one of said arms with said runner, and one or more aeroplanes mounted one on each of said arms.

16. The combination with a rotary support having one or more arms hinged thereto, of a runner vertically movable on said support, one or more braces connecting each one of said arms with said runner, one or more aeroplanes mounted one on each arm obliquely thereto, and one or more cars suspended one from each arm.

17. The combination with a rotary support having one or more arms hinged thereto, of a runner vertically movable on said support, one or more braces connecting each one of said arms with said runner, one or more aeroplanes mounted obliquely one on each arm, and means for rotating said support.

18. The combination with a rotary support, having one or more vertically movable members mounted thereon, of one or more cars suspended one from each member, one or more aeroplanes mounted one on each of said members, and means for adjusting the inclination of each of said aeroplanes upon the member carrying it.

19. The combination with a rotary support having one or more vertically movable arms hinged thereto, of one or more cars swinging one from each of said arms, one or more aeroplanes mounted one on each of said arms, and means for varying the degree of inclination of each of said aeroplanes relative to the arm carrying it.

20. The combination with a rotary support having one or more vertically movable arms hinged thereto, of one or more cars swinging one from each arm, one or more aeroplanes mounted one on each arm, means for varying the degree of inclination of each of said aeroplanes relative to the arm carrying it, and means for rotating said support.

21. The combination with a rotary support having one or more vertically movable arms hinged thereto, of one or more cars swinging one from each arm, one or more aeroplanes mounted one on each of said arms, means for varying the degree of inclination of each aeroplane relative to the arm supporting it, a runner vertically movable on said support, and one or more braces connecting each an arm to said runner.

22. The combination with a rotary support having one or more arms hinged so as to swing vertically thereon, of one or more cars swinging one to each arm, one or more aeroplanes hinged one to each arm, and means for adjusting each of said aeroplanes to different degrees of inclination each relative to the arm supporting it.

23. The combination with a rotary support having one or more arms hinged so as to swing vertically thereon, of one or more cars swinging one from each arm, one or more aeroplanes hinged one to each arm, and one or more turn buckles connecting each an aeroplane to the arm supporting it.

24. The combination with a rotary support having one or more vertically movable members mounted thereon, of one or more cars suspended one from each member, one or more aeroplanes hinged one to each member, and means for swinging each aeroplane to different positions relative to the member supporting it.

25. The combination with a rotary base, of a vertical frame supported thereon and having one or more vertically movable members mounted on said frame, one or more cars suspended one from each member, and one or more aeroplanes mounted obliquely one on each of said members.

26. The combination with a rotary base, of a vertical frame supported thereby and having one or more vertically movable members, one or more cars suspended one from each member, one or more aeroplanes mounted one

on each member, and means for changing the inclination of each aeroplane relative to its supporting member.

5 27. The combination with a rotary base, of a circular runway, a plurality of rollers interposed between said base and said runway and supporting the base, a vertical frame carried by the base and having one or more members vertically movable thereon, one or more cars suspended one from each member, and one or more aeroplanes mounted obliquely one on each of said members.

10 28. The combination with a rotary base, of a roller bearing supporting the base, an anchor for preventing vertical movement of the base, a vertical frame mounted on the base and having one or more members vertically movable thereon, one or more cars suspended from said members, and one or more aeroplanes mounted obliquely one on each of said members.

15 29. The combination with a rotary base provided with peripheral teeth, of a worm engaging said teeth, means for rotating said worm, a frame supported on the base and having one or more vertically movable members, one or more cars suspended one from each of said members, and one or more aeroplanes mounted obliquely one on each member.

20 30. The combination with a rotary support having one or more members vertically movable thereon, one or more cars suspended one on each member, one or more aeroplanes mounted obliquely one on each member, a motor having a driving shaft, and means for imparting rotation from said shaft to said rotary support.

30 31. The combination with a rotary support having one or more arms hinged to swing vertically thereon, one or more cars suspended one from each arm, one or more flexible members connecting each a car to its supporting arm,

and one or more aeroplanes mounted one on each of said arms in a position obliquely thereto.

32. The combination with a rotary support having one or more arms hinged to swing vertically thereon, of one or more cars suspended one from each arm, a runner vertically movable on said support, one or more braces connecting respectively said arms to said runner, a vertically adjustable stop on said support for limiting the vertical movement of said runner, and one or more aeroplanes mounted obliquely one on each of said arms.

33. The combination with a rotary support having one or more arms hinged to swing vertically thereon, one or more cars suspended one from each arm, one or more aeroplanes hinged one to each arm, means for swinging each aeroplane to different degrees of inclination each on its supporting arm, a vertically movable runner mounted on said support, and one or more braces connecting each an arm with said runner.

34. The combination with a rotary support having one or more arms hinged to swing vertically thereon, one or more cars suspended pivotally one to each arm, one or more flexible members connecting each car to its supporting arm for limiting the swinging of said car, one or more aeroplanes mounted one on each arm, and means for changing the inclination of each aeroplane relative to its supporting arm.

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

HORACE A. LOCKWOOD.

Witnesses:

WARREN D. HOUSE,

EDW. C. TALLQUIST.