

J. METZGER,
AMUSEMENT APPARATUS.
APPLICATION FILED APR. 10, 1920.

1,419,578.

Patented June 13, 1922.

4 SHEETS—SHEET 1.

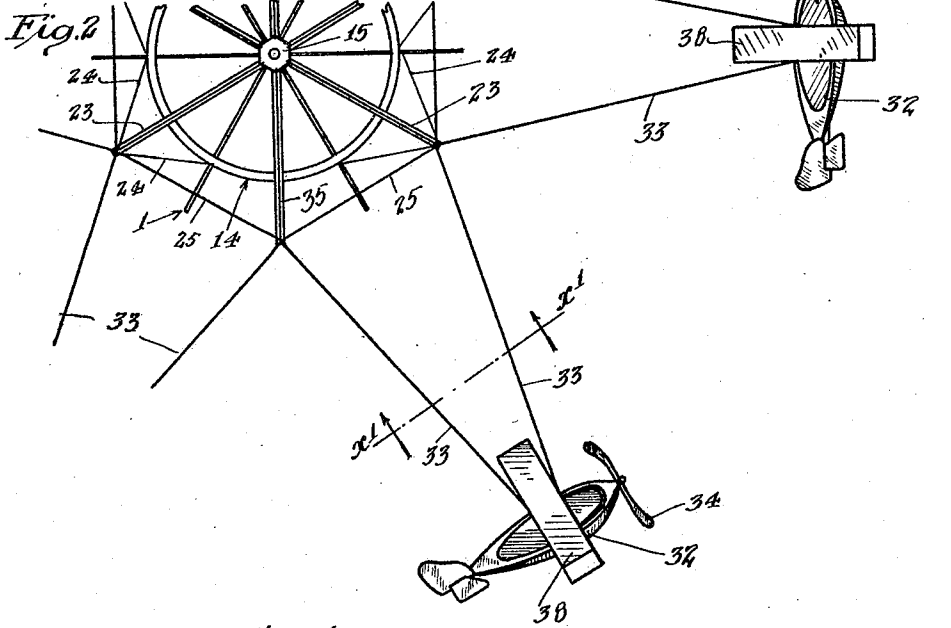
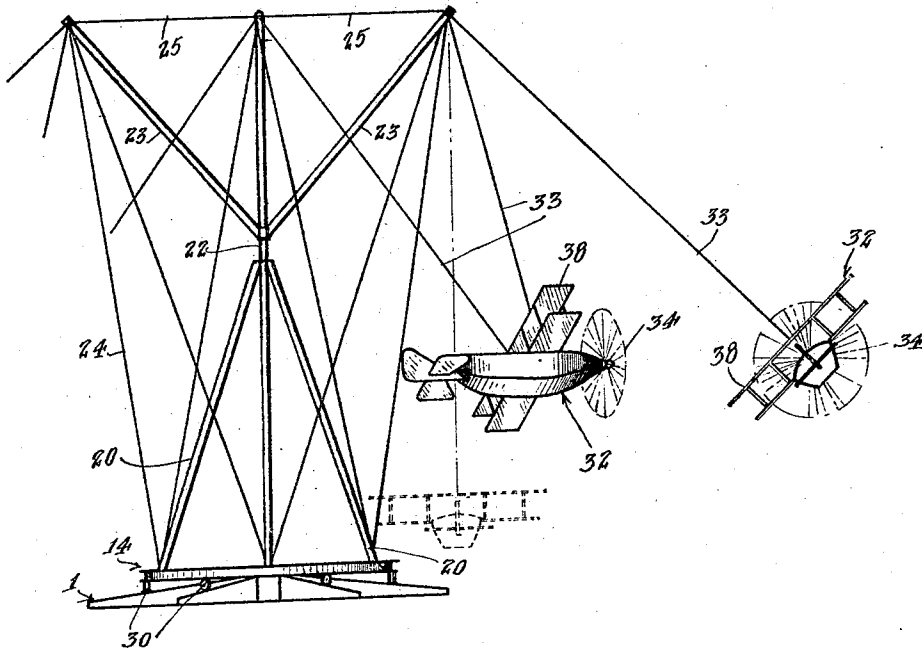


Fig. 1



INVENTOR
John Metzger
BY
Fredrick W. Weyer
ATTORNEY

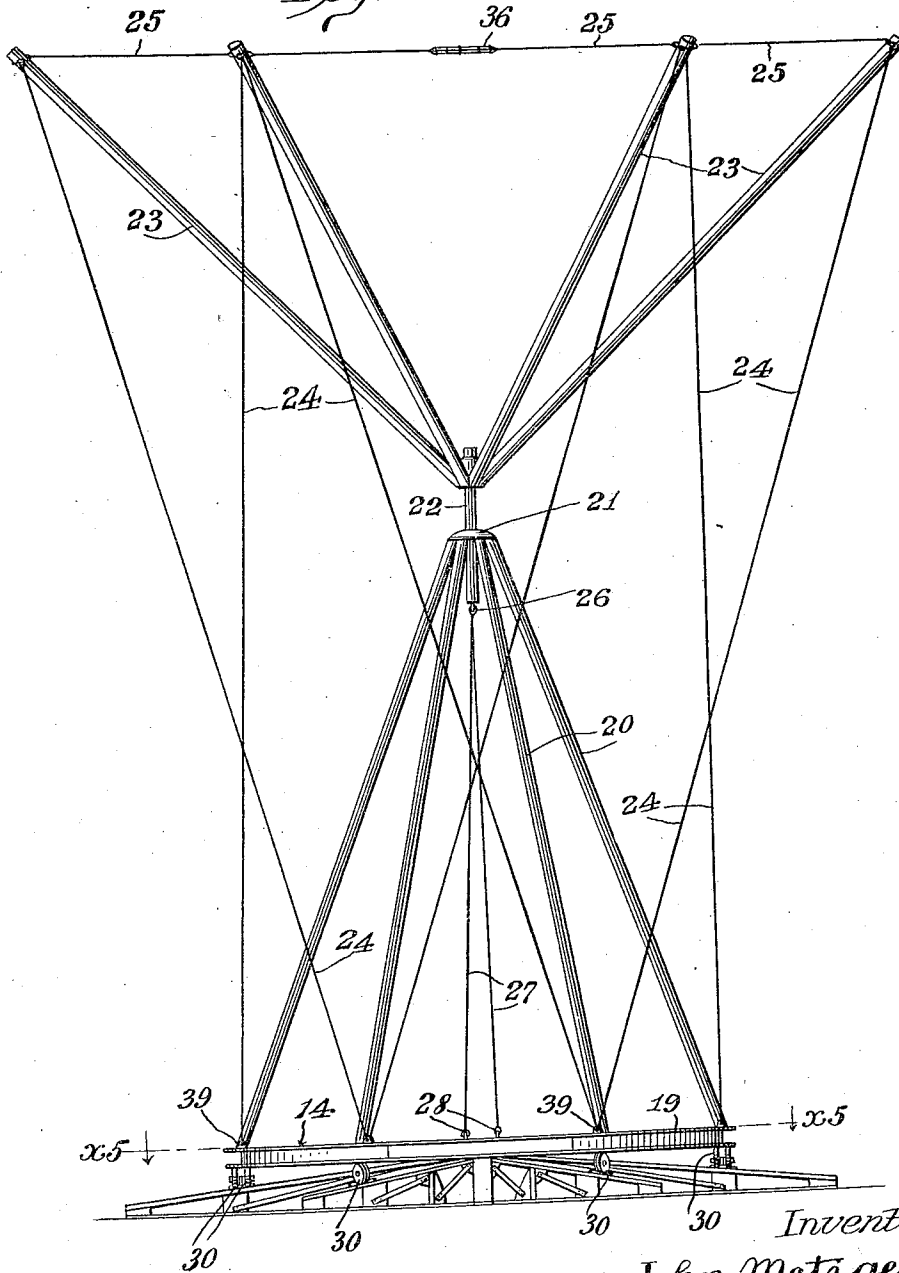
J. METZGER.
AMUSEMENT APPARATUS.
APPLICATION FILED APR. 10, 1920.

1,419,578.

Patented June 13, 1922.

4 SHEETS—SHEET 2.

Fig. 3.



Inventor:

John Metzger

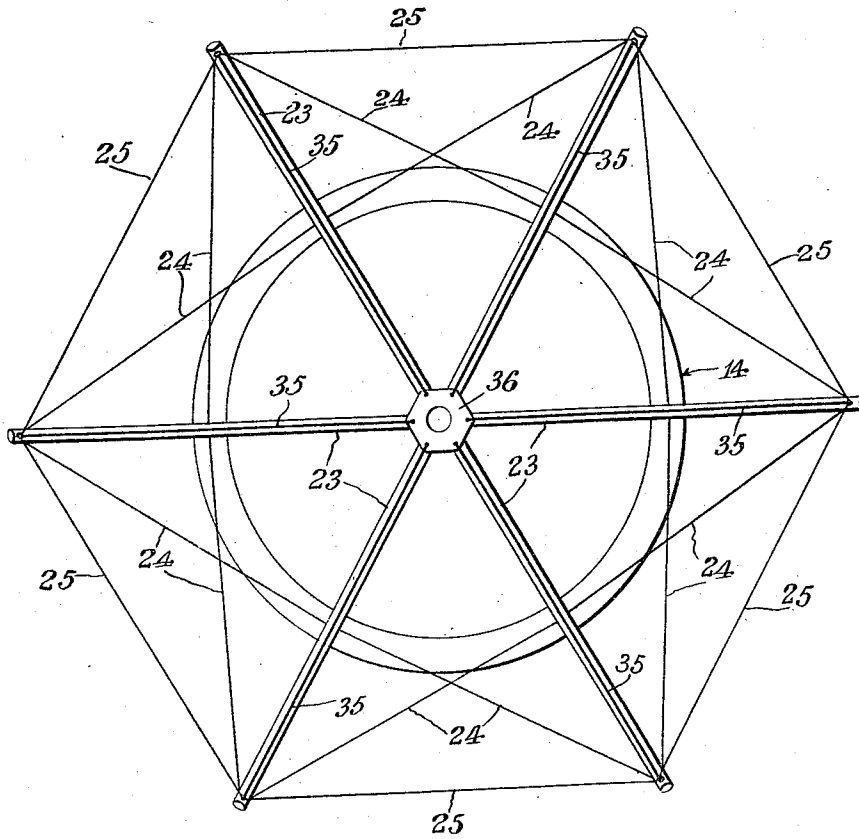
By *Fredrick J. Ryan* Attorney

J. METZGER.
AMUSEMENT APPARATUS.
APPLICATION FILED APR. 10, 1920.

Patented June 13, 1922.
4 SHEETS—SHEET 3.

1,419,578.

Fig. 4.



Inventor.
John Metzger
By *Fredrick W. Ryan*
Attorney

UNITED STATES PATENT OFFICE.

JOHN METZGER, OF LOS ANGELES, CALIFORNIA, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO SECURITY AMUSEMENT ENGINEERING CORPORATION, OF LOS ANGELES, CALIFORNIA, A CORPORATION OF CALIFORNIA.

AMUSEMENT APPARATUS.

1,419,578.

Specification of Letters Patent. Patented June 13, 1922.

Application filed April 10, 1920. Serial No. 372,776.

To all whom it may concern:

Be it known that I, JOHN METZGER, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented a new and useful Amusement Apparatus, of which the following is a specification.

This invention relates to an apparatus of the type employing a series of passenger-carrying devices adapted to be swung or carried in a circle about a support. Such passenger-carrying devices are frequently in the form of aeroplanes and the passenger-carrying devices are suspended from the support by rods or cables.

In many apparatus of this type, the stationary supporting structure rises to a considerable height above the ground, thus giving opportunity for the cables connecting the passenger-carrying devices with the rotary element of the apparatus, if one of the cables should become broken, to be wound around the stationary supporting structure and thus draw the passenger-carrying device, partly supported by said cable, into engagement with the stationary supporting structure, thus exposing the passengers to liability of injury. An object of this invention is to avoid liability of injuring the passengers in this manner if, for some reason or other, the passenger-carrying device should move toward the supporting structure and engage the same.

Another object of this invention is to produce a supporting structure, for captive aeroplanes or other passenger-carrying devices, in which the rigid members of the supporting structure are mounted in such manner that the entire structure can be readily rotated.

Another object is to produce a structure of relatively great strength and light weight.

Another object is to provide for simplicity of construction of the apparatus.

Another object is to provide for ease of assembling and disassembling the apparatus.

Another object is to securely anchor the rotating support to the base so as to withstand all forces tending to overturn said support.

Another object is to so arrange and construct the various members thereof, that

strains due to unbalanced loading of the structure will be transmitted to the base as simple tension and compression forces.

Other objects and advantages will appear in the subjoined detailed description.

The accompanying drawings illustrate the invention.

Figure 1 is a side elevation of an apparatus embodying the invention.

Fig. 2 is a broken plan view of Fig. 1.

Fig. 3 is an enlarged side elevation of the supporting structure, and the base thereof, the view being from the line x^1-x^1 , Fig. 2.

Fig. 4 is a plan view of Fig. 3, omitting the base.

Fig. 5 is an enlarged broken plan view from line indicated by x^5-x^5 , Fig. 3, showing details of the rotary mounting and the driving mechanism.

Fig. 6 is an elevation, partly in section on line indicated by x^6-x^6 , Fig. 5.

There is provided a base, indicated in general by the character 1. The base may be of any suitable construction and in the drawings is illustrated as being composed of a number of structural iron members fabricated in a manner well understood in the art pertaining to the fabrication of metal structures. The base 1 is provided with bearings 2 for a horizontally positioned shaft 3 provided at its outer end with a universal connection 4 for coupling the shaft 3 to a power shaft 5 which may be driven by any mechanical power.

The inner end of the shaft 3 is provided with a bevel pinion 6 meshing with a bevel gear 7 on a vertical stud or pin 8 which is stationarily mounted in a bearing 9 of the base 1. The gear 7 connects with a spur pinion 10 engaging an internal gear 11 on the lower end of a supporting structure indicated in general by the character 12. In this instance the gear 11 is fastened to a circular angle member 13 of the supporting structure and said structure also comprises a circular girder 14 to which the angle member 13 is attached. The supporting structure 12 also comprises a central hub 15 which is connected by radial spokes or arms 16 to the girder 14. Projecting downwardly from the hub 15 is a stub shaft 17 journaled in a bearing 18 of the base 1. In this particular instance the base 1 is cone

shaped and the bearing 18 is positioned at the apex of the cone.

The supporting structure 12 is otherwise constructed as follows: The girder 14 provides a rotary mounting for the lower ends of upwardly and inwardly slanting compression members forming supporting legs 20, the upper ends of said legs being engaged by a collar 21 on a vertical stem 22. Connected at their lower ends to the stem 22 are upwardly and outwardly slanting compression members forming radial arms 23. In the particular instance shown in the drawings the arms 23 are six in number as are also the legs 20, and each of the arms 23 is positioned directly above one of the legs 20. The upper end of each of the arms 23 is connected by a tension member in the form of a cable 24 to an ear 39 mounted on the upper plate 19 of the girder 14, said ears being positioned adjacent the lower ends of the legs 20. The connections of the cables 24 with the arms 23 are in staggered relation with the connections of said cables with the girder 14, that is to say, the cables 24 extend aslant circumferential of the apparatus as clearly shown in Fig. 1 of the drawings. Each arm 23 is connected by two of the cables 24 with two different legs 20 on opposite sides of a vertical plane passing through the arm 23; and each of the legs 20 is connected by two of the cables 24 to alternatively positioned arms 23.

The upper ends of adjacent arms 23 are connected to one another by tension members in the form of a cable 25. The lower end of the stem 22 is provided with a ring 26 to which is connected the upper ends of tension members in the form of a cable or cables 27 which are fastened at their lower ends to rings 28 mounted on the upper face of the hub 15.

Connected with each of the arms 23 is a tension member 35 and the tension members are all connected to one another by a suitable coupling 36 which, in this instance, is in the form of a plate that is provided with marginally positioned eyes through which the tension members 35 pass.

The bottom plate 29 of the girder 14 forms a track resting upon and supported by a series of rollers 30 which are rotatively mounted in pairs on radial members 31 of the base, said radial members being connected at their inner ends with the bearing 18.

Any suitable passenger carrying devices 32 may be suspended by tension members in the form of cables 33 from the arms 23, in this particular instance said devices being shown in the drawings in the form of aeroplanes provided with planes 38 and propellers 34. The propellers 34 may be driven by any suitable means, not shown, such means being well understood in this art and therefore requiring no description herein.

Preferably the lower ends of two adjacent cables 33 will be connected with one of the devices 32, and the upper ends of said cables may be connected with different arms 23 positioned adjacent one another.

The stub shaft 17 is provided with a nut 37 forming a shoulder to prevent said shaft from being pulled out of the bearing 18 by a tendency to tipping of the supporting structure 12 in event of the load on said structure being greater on one side than on the other side.

In practice, the entire supporting structure 12 will be rotated by driving the shaft 5, thus causing the passenger-carrying devices 32 to be swung outwardly and upwardly by centrifugal force. If the loading of the different passenger-carrying devices should be uniform, which in practice is not realized, the centrifugal pull of the tension members 35 would be uniform and there would be no tendency to upsetting of the structure 12; but a greater load in the passenger-carrying device on one side than in that on the opposite side produces a turning moment about the base and such turning moment is counteracted by the tension members 27, shaft 17, bearing 18 and nut 36.

From the foregoing it will be clear that the apparatus is of simple and light construction relative to the loads which it is designed to support and to the unbalanced centrifugal forces to which it is subjected when in operation, the unbalanced effect, when the load is not uniform in the various passenger-carrying devices, multiplying rapidly as the speed of rotation increases.

The invention is not limited in its broader phases to the exact details of construction shown in the drawings and above described but the invention includes whatever changes may be made falling within the spirit and scope of the appended claims.

I claim:

1. In an amusement apparatus, a base, legs rotatively supported on said base, outwardly and upwardly slanting arms connected with said legs, tension members connected with the outer ends of the arms and with the lower ends of the legs, tension members connecting the arms with one another, and passenger-carrying devices connected with the outer ends of the arms.

2. In an amusement apparatus, a base, legs rotatively supported on said base, outwardly and upwardly slanting arms connected with said legs, tension members connected with the outer ends of the arms and with the lower ends of the legs, tension members connecting the arms with one another, and passenger-carrying devices suspended by cables from the outer ends of the arms.

3. In an amusement apparatus, a base, legs rotatively supported on said base, out-

70

75

80

85

90

95

100

105

110

115

120

125

130

wardly and upwardly slanting arms connected with said legs, tension members connected with the outer ends of the arms and with the lower ends of the legs, tension members connecting the arms with one another, a tension member rotatively connected at its lower end with the base and at its upper end with the upper ends of the legs, and passenger-carrying devices suspended from the outer ends of the arms.

4. In an amusement apparatus, a base, outwardly and upwardly slanting arms, means rotatively supporting the arms on the base, tension members connected with the outer ends of the arms and with the supporting means, tension members connecting the arms with one another, a tension member rotatively connected at its lower end with the arm-supporting means and at its upper end with the lower ends of the arms, and passenger-carrying devices suspended from the outer ends of the arms.

5. In an amusement apparatus, a base, a member mounted to rotate on the base, legs mounted on said member, outwardly and upwardly slanting arms connected with said legs, tension members connecting the outer ends of the arms with the rotary member, tension members connecting the arms with one another, and passenger-carrying devices connected with the outer ends of the arms.

6. In an amusement apparatus, a base, a member mounted to rotate on the base, legs mounted on said member, outwardly and upwardly slanting arms connected with said legs, tension members connecting the outer ends of the arms with the rotative member, tension members connecting the arms with one another, a tension member connected at its upper end with the upper ends of the legs and at its lower end with the rotary member, and passenger-carrying devices suspended from the outer ends of the arms.

7. In an amusement apparatus, a base, a member mounted to rotate on the base, outwardly and upwardly slanting arms, means connecting said arms with the rotary member, tension members connecting the outer ends of the arms with the rotary member below the lower ends of the arms, tension members connecting the arms with one an-

other, and passenger-carrying devices connected with the upper ends of the arms.

8. In an amusement apparatus, a base, a member mounted to rotate on the base, outwardly and upwardly slanting arms, compression members connecting said arms with the rotary members, tension members connecting the outer ends of the arms with the rotary member, tension members connecting the arms with one another, a tension member connected at its upper end with the lower ends of the arms and at its lower end with the rotary member, and passenger-carrying devices suspended from the outer ends of the arms.

9. In an amusement apparatus, a base, a hub, means rotatively fastening the hub to the base, a girder connected with the hub, legs mounted on the girder and connected together at their upper ends, arms connected with the legs, a tension member connected at its upper end with the legs and at its lower end with the hub, tension members connecting the upper ends of the arms with the girder, tension members connecting the arms to one another, and passenger-carrying devices suspended from the upper ends of the arms.

10. In an amusement apparatus, a rotatively mounted member, compression members mounted on the rotative member and connected together at their upper ends, other compression members connected with the first compression members, tension members connecting the upper ends of the first compression members to one another, other tension members connecting the upper ends of the first compression members to the rotative member, the connections of said last named tension members with the compression members being in staggered relation with the connections of said tension members with the rotative member, and passenger-carrying devices suspended from the upper ends of the arms.

Signed at Los Angeles, California, this 2d day of April, 1920.

JOHN METZGER.

Witnesses:

GEORGE H. HILES,
L. BELLE WEAVER.