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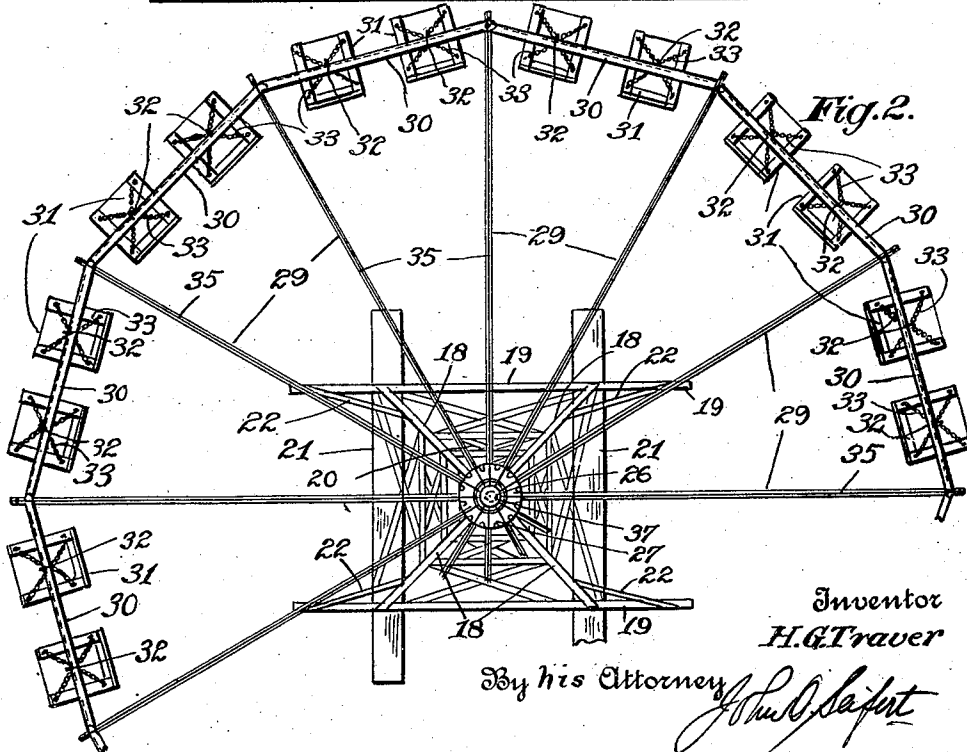
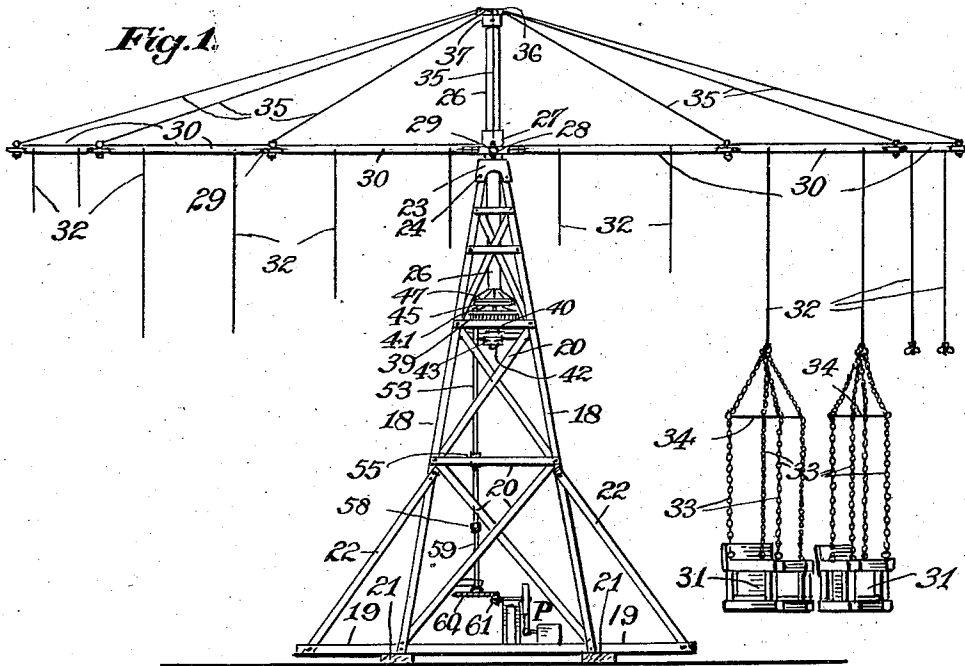
1,616,476

H. G. TRAVER

AMUSEMENT APPARATUS

Filed Jan. 18, 1924

3 Sheets-Sheet 1



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By his Attorney

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Feb. 8, 1927.

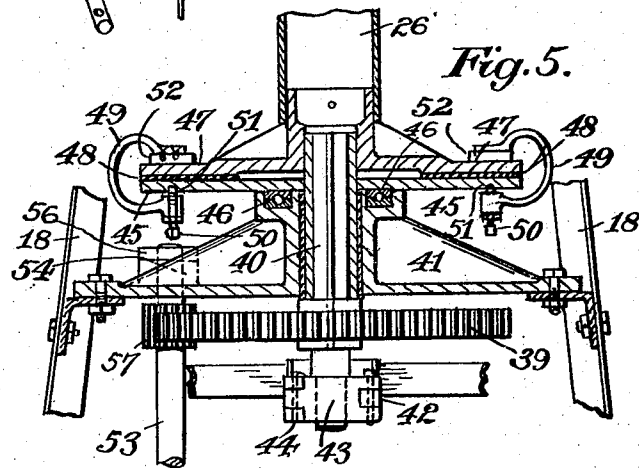
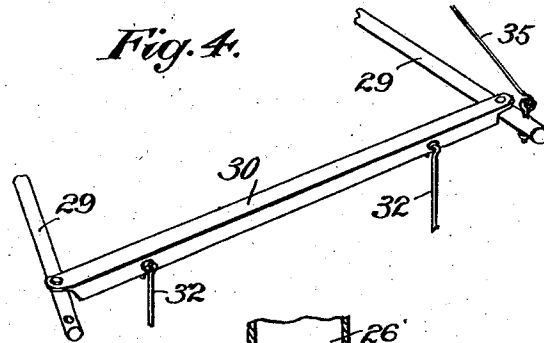
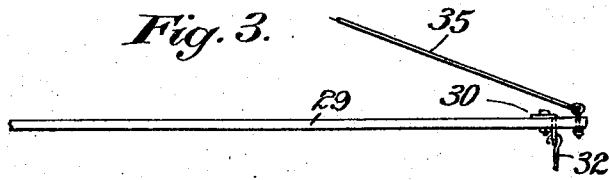
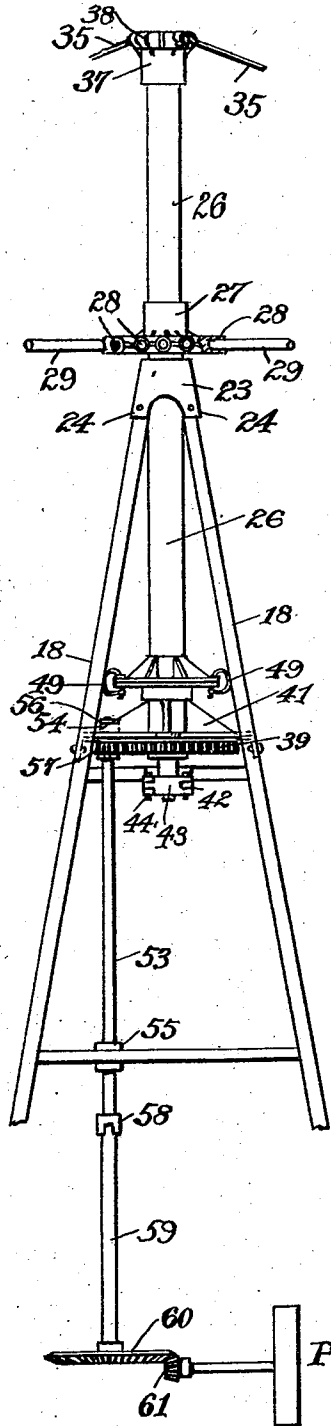
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AMUSEMENT APPARATUS

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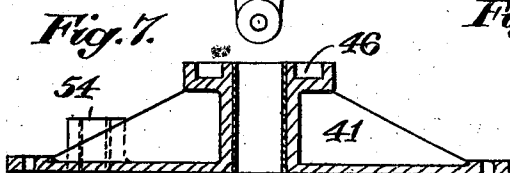
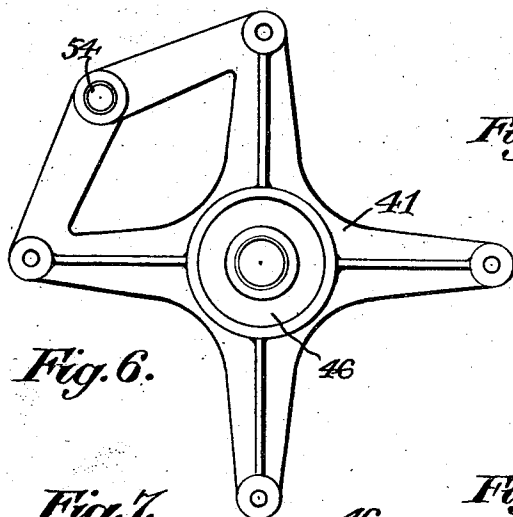
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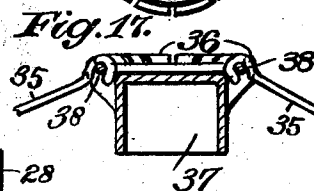
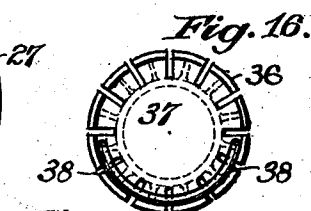
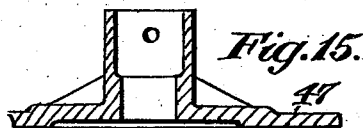
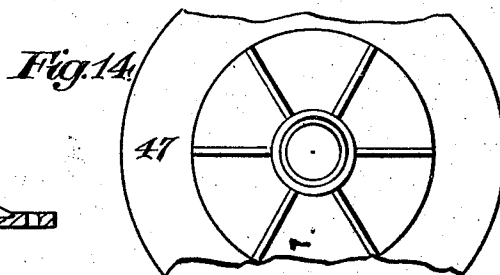
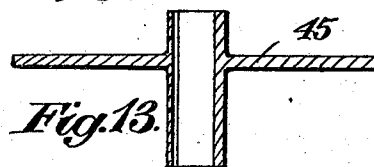
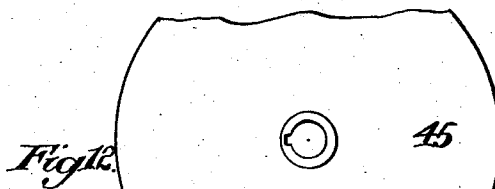
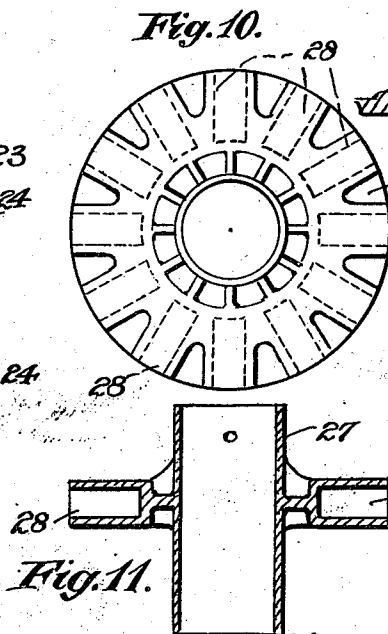
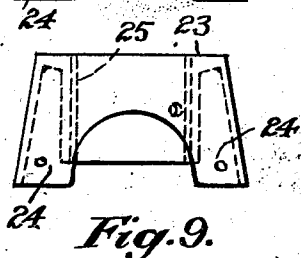
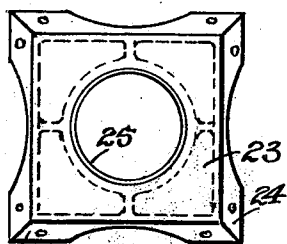
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AMUSEMENT APPARATUS

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3 Sheets-Sheet 3



*Fig. 8.*



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Patented Feb. 8, 1927.

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# UNITED STATES PATENT OFFICE.

HARRY G. TRAVER, OF BEAVER FALLS, PENNSYLVANIA.

## AMUSEMENT APPARATUS.

Application filed January 18, 1924. Serial No. 686,969.

This invention relates to amusement apparatus usually termed as "aeroplane swings" or "circle swings" wherein a frame or support rotatably carried by a tower to extend laterally thereof and move in a horizontal plane has seats for one or more persons suspended therefrom to participate in the rotative movement of the frame. In apparatus of this character the frame or support from which the seats are suspended is fixed to and carried by a shaft in the tower, said shaft having a positive driving connection with and being driven by power means, such as an electric motor or internal combustion engine. It often happens that the power means is suddenly stopped while the apparatus is in operation, by breakage thereof or in a part in the driving connection of the power means with the said carrying support, such as a gear, or a breakage in the support, with the result, due to the positive driving connection between the driving means and seat carrying frame, that this sudden stoppage of the frame causes the seats with the passengers not only to come into collision and strike violently against each other, but also to swing inward toward the tower and collide therewith with such force as to cause the collapse of the tower with the consequent destruction of the apparatus and possibly injury to the passengers.

It is the principal object of the present invention to overcome the above disadvantage by providing an improved driving connection between the power means and the seat carrying support operative to rotate the support from the driving means and to permit of a limited retarded or gradual slowing down movement of one relative to the other upon the sudden stoppage of either the driving means or support.

It is a further object of the invention to provide a friction driving coupling between the driving means and the seat carrying support, one member of which coupling or clutch is operatively connected to the driving means and the other member connected to the seat carrying support, whereby the latter is carried by the clutch member of the driving means and the weight of said support serves to maintain the clutch in operative driving relation.

It is a further object of the invention to provide adjustable and releasable means to variably increase the frictional contact be-

tween the friction clutch members of the coupling between the driving means and seat carrying support, said means comprising yoke shaped clamping members of resilient material adapted to straddle the peripheral portion of the friction members or disks, with one end of said members arranged to frictionally engage one clutch member and the opposite end having an adjustable connection with the other clutch member whereby to increase and decrease the tension of said clamping members.

A further object of the invention relates to an improved arrangement of means for supporting the tower together with means to tie together the upper ends of the uprights of the tower, which means also serves to rotatably mount the said carrying support in the tower.

Another object of the invention relates to an improved construction and arrangement of seat carrying support together with improved means for suspending the seats from said support.

Other objects and advantages will hereinafter appear.

In the drawings accompanying and forming a part of this specification, Figure 1 is a side elevation of an amusement device with my invention embodied therein.

Figure 2 is a plan view, partly broken away, to show the arrangement of the seat carrying support, as well as of the tower supporting base.

Figure 3 is a side elevation of the upper portion of the tower to show the manner of mounting the seat carrying support therein, and the driving connection thereof with its driving means.

Figure 4 is a perspective view of a portion of the seat carrying support to show the manner of connecting the seat suspending means thereto.

Figure 5 is a cross sectional view of the coupling or clutch between the seat carrying support and its driving means and the means for mounting the same in the tower, and also showing the means to variably increase the frictional contact of the coupling or clutch members.

Figure 6 is a plan view and Figure 7 is a cross sectional side elevation of a bearing support for mounting the driving means for the seat carrying support in the tower and supporting said seat carrying support thereby.

Figure 8 is a plan view and Figure 9 is a side elevation of a cap to engage the upper ends of the uprights of the tower to prevent spreading thereof and also arranged for the rotatable mounting of the seat carrying support.

Figure 10 is a plan view and Figure 11 is a sectional side elevation of a head forming a part of the seat carrying supporting means wherein to mount arms to extend radially therefrom and forming a part of the seat carrying support.

Figure 12 is a perspective view, partly broken away, and Figure 13 is a sectional side elevation of a clutch member connected to the driving means for coupling the seat carrying support thereto.

Figure 14 is a plan view, partly broken away, and Figure 15 is a side elevation, partly broken away, of the clutch member connected to the seat carrying support, and

Figure 16 is a plan view and Figure 17 is a cross sectional view of means to connect truss bars for supporting the lateral portions of the seat carrying support from a shaft forming a part of said seat carrying support.

Similar characters of reference designate like parts throughout the different views of the drawings.

In carrying out the embodiment of the invention shown in the drawings I provide a tower built up from structural steel and comprising uprights 18, four in number, of angle iron secured at their lower ends to bars 19 arranged in parallel and spaced relation with the uprights 18 secured thereto in opposed pairs, the uprights being connected and trussed by transverse and diagonal bars 20. The bars 19 form base members which are supported upon girders in the form of planks 21 extending transversely of the bars 19 below the uprights as clearly shown in Figure 2.

The bars 19 are of such a length as to extend beyond the opposite sides of the tower to form supports for wind braces 22 secured at one end to the extremities of the bars 19 and at the opposite ends to the uprights of the tower. The uprights 18 converge toward each other upwardly from the base and are maintained in spaced relation by a cap 23, (Figures 8 and 9) having recesses 24 for the engagement of the ends of the uprights which are secured therein as by bolts or pins, said cap being arranged with a central opening 25 for a purpose to be hereinafter described.

A seat or car carrying support or frame is rotatably mounted and supported in the tower, said frame comprising a shaft 26 engaging or mounted in the cap 23 to have rotative and axial movement therein with a portion of the shaft extending into the tower and a portion above the tower, as shown in

Figures 1 and 3, this shaft preferably being tubular. A head 27 (Figures 10 and 11) is fixed to the shaft 26 intermediate its ends and above the tower said head being arranged with circumferentially disposed and radially extending sockets 28 for the engagement of arms in the form of tubular members or pipes 29 to extend radially outward beyond the tower, the arms being connected and maintained in spaced relation at their outer extremities by struts 30, as shown in Figures 2 and 4. The shaft 26 and head 27 mounted thereon with the arms 29 extending radially therefrom and connected by the struts 30 constitute a frame or support for passenger carrying cars or seats which is rotatable in a horizontal plane. The outermost or peripheral portion of the seat carrying support is trussed from the shaft 26 by truss members in the form of rods 35 connected at one end to eye bolts secured in the extremity of the arms 29 and the opposite hooked ends engaging in transverse slots circumferentially disposed around a flange 36 of a cap 37 engaging over the top of the shaft 26 with the hooked ends engaging over a ring 38 seated within the flange 36 of said cap as clearly shown in Figures 16 and 17.

Seats 31 for one or more persons are suspended from the struts 30 of the frame or support by means of rods 32 arranged with a hook at one end for releasable connection with the struts and the seats suspended from said rods 32 by flexible means, such as cables or chains, in the present instance shown as chains 33, one chain being connected adjacent to each corner of a seat and maintained in spaced relation by spacer bars 34 connected to and engaged between the chains adjacent the connection thereof with the rods 32. The connection of the chains with said rods is in the nature of a swivel connection whereby the seat may have rotative or universal movement independent of their movement with the seat carrying support in the tower.

The seat carrying support or frame is operatively connected to a source of power or driving means, such as an electric motor or internal combustion engine, the latter being illustrated in a diagrammatic manner at P as constituting the driving means in the present instance. This operative connection is so arranged whereby the seat carrying support is rotated from the driving means, and the driving means and said carrying support is adapted to have a limited retarded, or gradual slowing down movement, one relative to the other upon the sudden stoppage of either the driving means or the seat carrying support. This connection comprises a driver in the form of a gear 39 fixed to a shaft 40 journaled to rotate on a vertical axis in a bearing member 41 fixed to the uprights 18 of the tower, as shown in Figures 1 and 3, the shaft with the gear being held against endwise

movement by a separable bearing consisting of a member 42 fixed to bars extending transversely of the tower and the other member 43 having a hinge connection at one end with the bearing member 42, as at 44, and having a perforated lug or lugs at the opposite end to interengage with a perforated lug or lugs of the bearing member 42 and locked thereto by a pin engaging the perforations in the lugs. The gear 39 is arranged on the shaft below the bearing member 41 and has fixed thereto at the upper end a disk 45 which is supported upon a ball or roller bearing carried at the upper end of the bearing support 41, as shown at 46. The disk 45 constitutes one member of a friction clutch or coupling, the other member in the form of a friction disk 47 being fixed to the shaft 26 of the seat carrying support. The disk 47 engages upon the disk 45 and by means of which the seat carrying support is supported upon the disk 45 and the weight of the seat carrying support serving to frictionally couple the disks together to drive said seat carrying support. The hub of the disk 45 at one side thereof engages within the bearing member 41 and the hub at the opposite side of said disk engages within the disk 47, with the shaft 40 engaging in said hub of the disk 45 and extending into the disk 47, which arrangement serves to center the friction disks relative to each other. To increase the frictional contact between the disks suitable friction material 48, such as is commonly termed as "break lining" may be interposed between the disks.

To further increase the frictional contact between the disks 45, 47, and vary such frictional contact pressure, although this is not deemed absolutely essential to the operation of the device, I provide yoke shaped members 49 of resilient or springy material to straddle the peripheral portion of the disks two of said members being shown in the present instance straddling the disks at diametrically opposite points. One end of these members is adjustably connected to one of the disks, in the present instance the disk 45, as by screws 50 threaded into the extremity of one leg of the yokes and seated in a recess 51 in the disk, while the extremity of the other leg is seated in a shoe 52 frictionally bearing against the disk, as clearly shown in Figure 5. It will be obvious that by turning the screw into the one leg of the yokes said leg will be moved away from the disk thereby increasing the tension of the material of the yokes and the force of the engagement of the shoes 52 with the other disk.

By the arrangement of the driving connection between the seat carrying support and its driver it will be obvious that one may have a retarded movement relative to and independent of the other by the sudden stop-

page of either the driving means due to breakage or otherwise, or by the seat carrying support or a seat encountering an obstruction whereby the movement of the seat carrying support or frame will be brought to a gradual stop instead of a sudden stop with the possibility of the seats moving inward toward and colliding with the tower and possible collapsing of the same.

The gear 39 is operatively connected to the source of power by a shaft 53 journaled at the upper end in a bearing, as at 54, in the bearing support 41 (Figure 6), and a bearing 55 carried by a cross bar connected to the tower and held against longitudinal movement by a collar 56 fixed to the shaft above the bearing support 41, a pinion 57 meshing with the gear 39. This shaft is connected by a jaw clutch 58 to a shaft 59 having a gear 60 fixed thereto meshing with a pinion 61 connected to the power shaft of the engine P.

Having thus described my invention I claim:

1. In amusement apparatus, a tower, a seat carrying shaft mounted in said tower to rotate on a vertical axis, a driver including a friction disk having a horizontal surface journaled in a fixed bearing in the tower coaxially below the seat carrying shaft, and a corresponding friction disk fixed to the seat carrying shaft to engage upon and support said shaft from the driver disk and operatively couple the driver to said shaft.

2. In amusement apparatus, a tower; a shaft mounted in the upper end of said tower to rotate and have axial movement; a seat carrying frame mounted upon said shaft and adapted to be moved in a horizontal plane through the rotation of the shaft; a friction disk fixed to the lower end of said shaft having a central perforation; a friction disk rotatably supported in a fixed bearing below and in axial alignment with the shaft for engagement of the disk on the shaft to support and frictionally drive the latter and having a central perforation corresponding with the perforation in the first disk; and a driven shaft extending through the central opening of and operatively connected to the second disk and having a projecting part rotatably engaging in the perforation of the first disk.

3. In amusement apparatus, a tower; a shaft rotatably and slidably mounted in said tower; a frame rotatable with said shaft extending laterally from the tower; a driver for said shaft rotatably mounted in fixed position in the tower; and a friction clutch between the driver and shaft, comprising friction disk fixed to the driver and the shaft whereby the disk fixed to the shaft is supported with the shaft from and driven by the disk on the driver, and means arranged centrally of the disks to align the same.

4. In amusement apparatus, a tower; a shaft journaled in the tower; passenger carrying seats; a frame from which the seats are suspended rotatable with said shaft; a driver; a friction clutch between the driver and shaft, comprising disks fixed to the driver and shaft; and adjustable yielding means for engagement of the peripheral portion of the disks to increase the frictional contact of the clutch disks.

5. In amusement apparatus, a tower; a shaft journaled in the tower; passenger carrying seats; a frame rotatable with said shaft from which the seats are suspended; a driver; a friction clutch between the driver and shaft, comprising disks fixed to the driver and shaft; and adjustable yielding means to variably increase the frictional contact of the disks, comprising yoke shaped members of resilient material to straddle the peripheral portion of the disks, one leg of

the yoke being adjustably connected to one disk and the other releasably engaging the other disk.

6. In amusement apparatus, the combination of a tower; a frame carried by the tower to extend laterally thereof and rotate in a horizontal plane; seats; and means to suspend the seats from the frame comprising seat suspending chains forming a four point suspension for the seats, a rod connected to the frame to have movement on an axis transverse to the axis of the rod, and a swivel connection between the chains and rod to permit of rotative movement of the seats about the rods independent of their movement with the frame.

Signed at Beaver Falls, in the county of Beaver and State of Pennsylvania, this 29th day of December, 1923.

HARRY G. TRAVER.