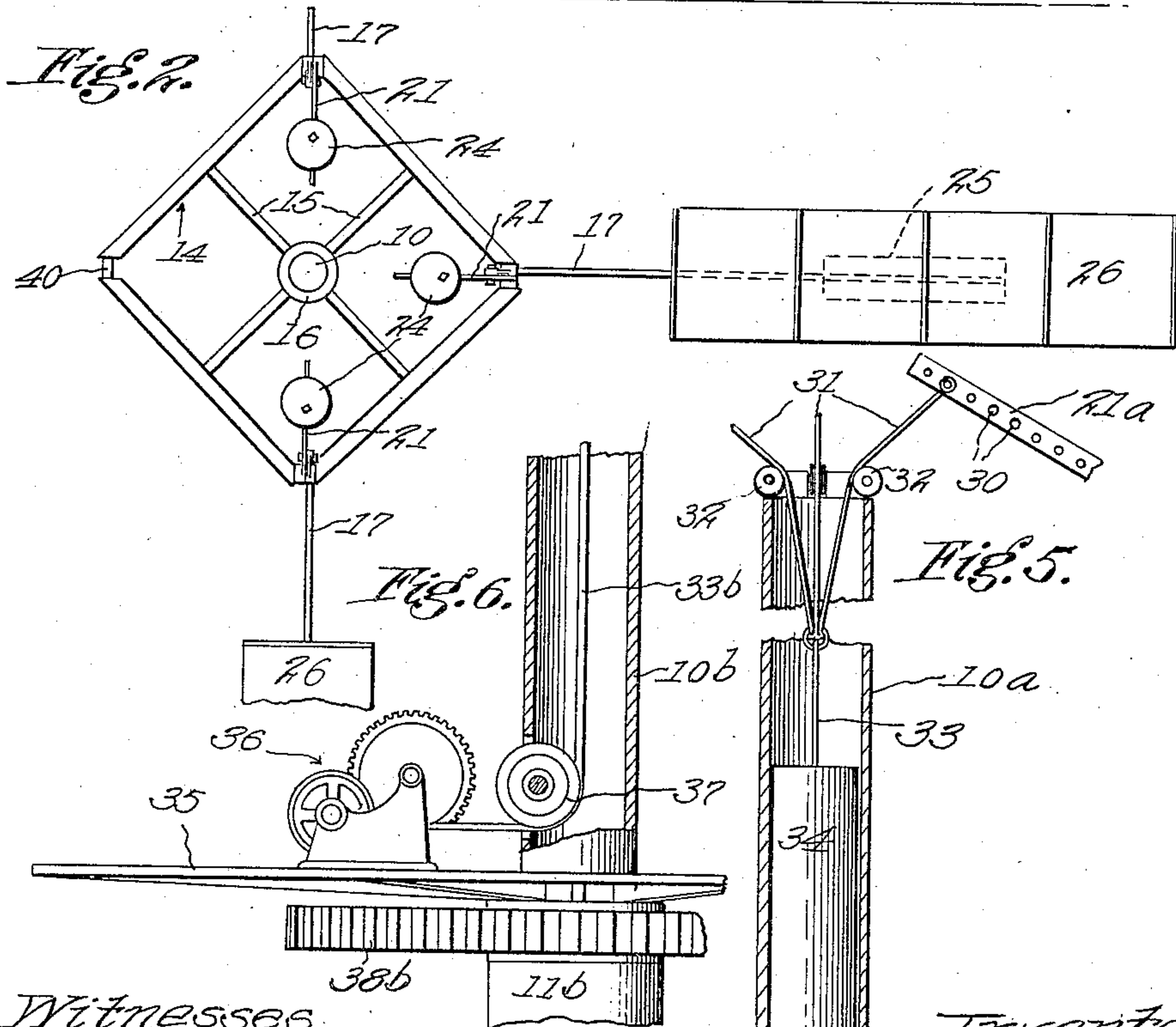
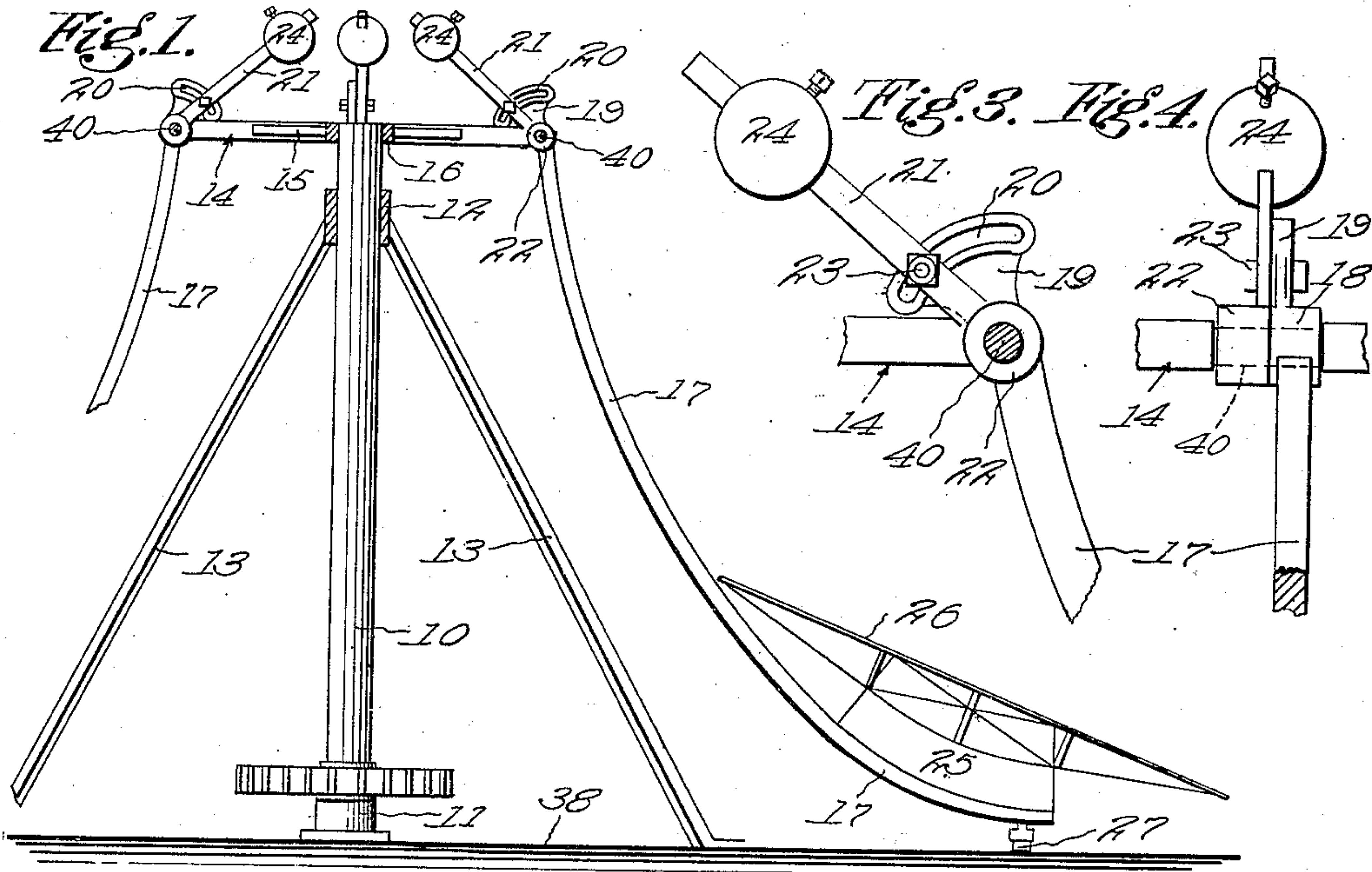


R. R. STEIN.
 ROUNDABOUT.

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966,135.

Patented Aug. 2, 1910.



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UNITED STATES PATENT OFFICE.

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ROUNABOUT.

966,135.

Specification of Letters Patent.

Patented Aug. 2, 1910.

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To all whom it may concern:

Be it known that I, ROBERT R. STEIN, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented new and useful Improvements in Roundabouts, of which the following is a specification.

This invention relates to improvements in roundabouts in which the combined action of centrifugal force and of reaction on the air raises the cars as they travel around the machine.

In the present preferred form the cars are mounted on arms which normally extend outwardly and downwardly from their point of pivotal attachment to the revolving frame. Lifting planes are mounted on the cars and aid in lifting them off the ground or floor surface when the machine is revolved. As the arm and car with persons therein weighs considerably more than the lifting plane is capable of raising at speeds practical for a device of this character, counterbalance weight means or other equivalent mechanism is employed to balance a part of the weight and thus allow the car to be lifted higher.

In the accompanying drawings, Figure 1 is a vertical section of my device. Fig. 2 is a fragmentary plan view of the same. Fig. 3 is a detail enlargement of the balancing weight and its connection, as shown in Fig. 1. Fig. 4 is an end elevation of the mechanism shown in Fig. 3. Fig. 5 is an enlarged detail view illustrating a modified form of balancing weight. Fig. 6 is an enlarged detail view illustrating a modified form where a hoisting mechanism is used in place of the weight shown in Fig. 5.

In the drawings 10 designates a vertical shaft supported in a step bearing 11 at its lower end and steadied at its upper end by a bearing 12 which may be supported by struts 13. At the upper end of shaft 10 a frame 14 is mounted, the frame in this case being formed in a hollow square and having spokes 15 which connect with a hub 16 mounted directly upon the upper end of shaft 10. At each of the four corners of this square frame is a pivot shaft 40. Mounted on pivot shafts 40 so as to swing in vertical planes are downwardly and outwardly extending arms 17, these arms having bosses 18 where they connect with shafts 40. On bosses 18 are mounted members 19 having circumferential slots 20 concentric

with shafts 40. Weight arm 21 is also mounted at 22 on shaft 40 and a bolt 23 passing through the weight arm and slot 20 provides means for setting the weight arm in any desired position relative to arm 17. Weight 24 is adjustably mounted on the weight arm so that its balancing moment may be increased or diminished at will.

On the outer free end of arm 17 a car 25 is mounted. This car may be of any design and configuration, being designed to carry passengers. Above the car is mounted a lifting plane 26, this plane being of any approved form and mounted in any approved manner to attain the maximum lifting power at the speed possible for the device. It is within the scope of my invention to adjustably mount the planes, so that they may be manipulated. Under the end of arm 17 a roller 27 is provided so as to support the arm when the machine is at rest and to allow the arm to move over the floor or ground surface 28 and be supported by the roller while gathering speed to raise off the surface.

In Fig. 5 I have shown a different equipment for balancing a portion of the weight of the arm. With this equipment the arms 21^a are provided with a series of holes for the adjustable connection of cables 31 leading over pulleys 32 downwardly inside of hollow shaft 10^a and connecting through a cable 33 to a single weight 34. This weight 34 is made of sufficient size to balance all of the arms and car. It will be seen that the action is somewhat different from that of the first described form. In the first form the cars are all lifted independently of each other, while in the second form they are somewhat interconnected through the medium of the cables leading to the single balancing weight. In either form the cars will be lifted to equal heights by the action of centrifugal force alone, no matter what weight there may be in the cars, but the lifting force of the planes will vary in proportion to the load as the lift is constant and the load variable. Any car having more load than the remaining cars will thus tend to pull up excessively on weight 34 and thus allow the other cars to sink to its own level.

In Fig. 6 I have shown a platform 35 mounted on shaft 10^b and a hoisting apparatus 36 mounted thereon. Cable 33^b is passed down through shaft 10^b and over a

sheave 37 to the hoisting apparatus. This hoisting apparatus may be controlled in the ordinary manner and operated to lift the arms bodily to any desired height while the whole machine is revolving. By manipulation of the hoist the arms may be lifted and lowered from time to time so that the cars may describe a path of wavy nature.

Shaft 10 is rotated through the means of a gear 38 or other equivalent mechanism. When a sufficient speed is attained the ends of arms 17 will be lifted by the action of centrifugal force and by the lifting power of planes 26. The position assumed will depend entirely upon the speed of which the machine is revolved, the amount of counterbalancing effect, and the weight of the passengers in the car.

Having described my invention, I claim:—

1. A roundabout, comprising a rotating frame, a vertically movable car mounted on the frame, means mounted on the car to lift the same by reaction upon the atmosphere, and counterbalancing means for the car.
2. A roundabout, comprising a rotating frame, a car mounted on the frame and vertically movable thereon, a lifting plane mounted on the car and adapted to react on the atmosphere, and means to mechanically lift the car.

3. A roundabout, comprising a frame rotatable about a vertical axis, a normally downwardly extending arm pivotally mounted at its upper end on the frame, counterbalance means tending to lift the free end of the arm, a car mounted upon the free end of the arm, and means for lifting the free end of the arm by reaction on the atmosphere.

4. A roundabout, comprising a frame rotatable about a vertical axis, a depending arm pivotally mounted at its upper end on the frame, means to mechanically lift the free end of the arm, a car mounted on the free end of the arm, and a lifting plane mounted on the car.

5. A roundabout, comprising a frame rotatable about a vertical axis, a plurality of downwardly extending arms pivoted at their upper ends to the frame, mechanical means for lifting the lower ends of the arms, cars mounted on the lower ends of the arms, and lifting planes mounted on the cars.

In witness that I claim the foregoing I have hereunto subscribed my name this 7th day of December, 1909.

ROBERT R. STEIN.

Witnesses:

JAS. H. BALLAGH,
ELWOOD H. BARKELEW.