

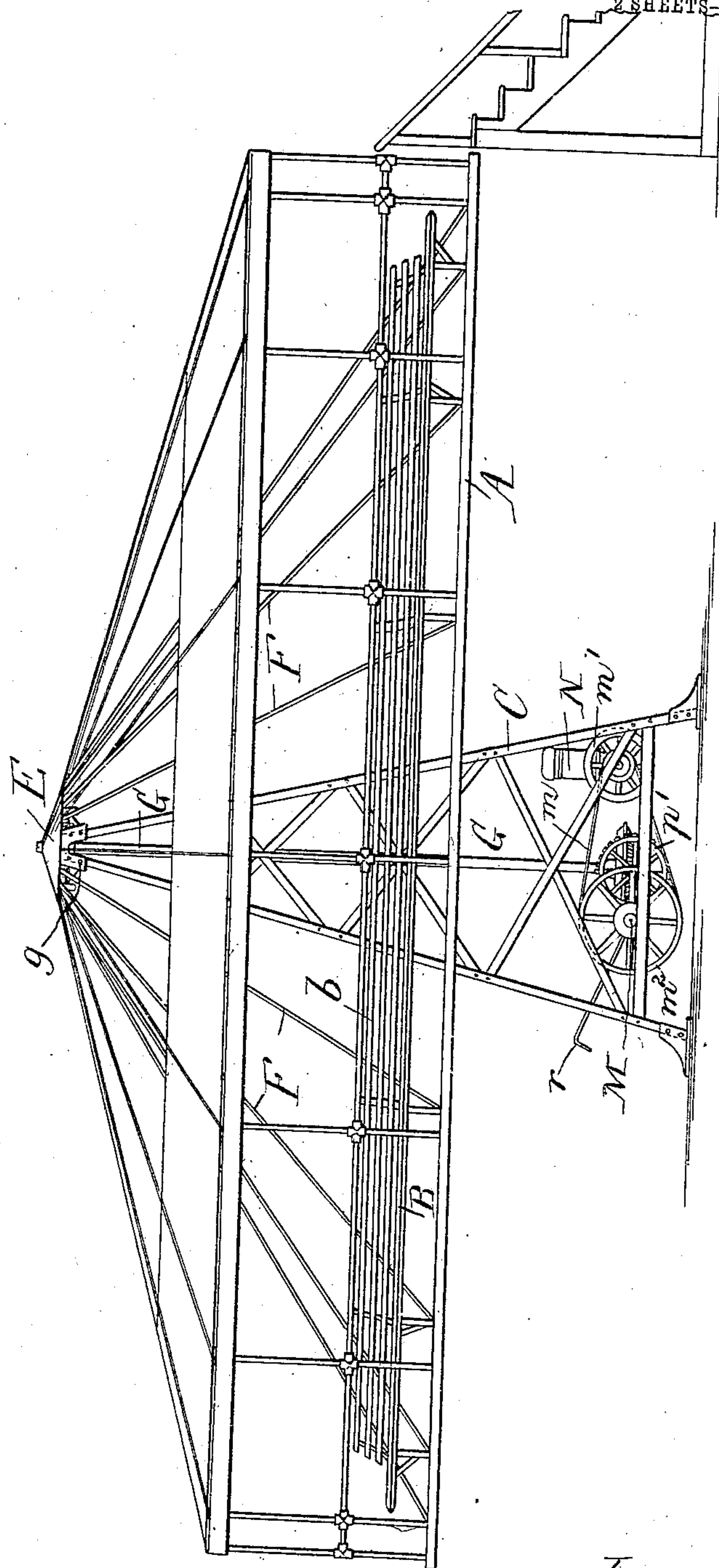
No. 863,133.

PATENTED AUG. 13, 1907.

J. W. ARMITAGE.  
AMUSEMENT APPARATUS.  
APPLICATION FILED AUG. 2, 1906.

2 SHEETS—SHEET 1.

Fig. 1.



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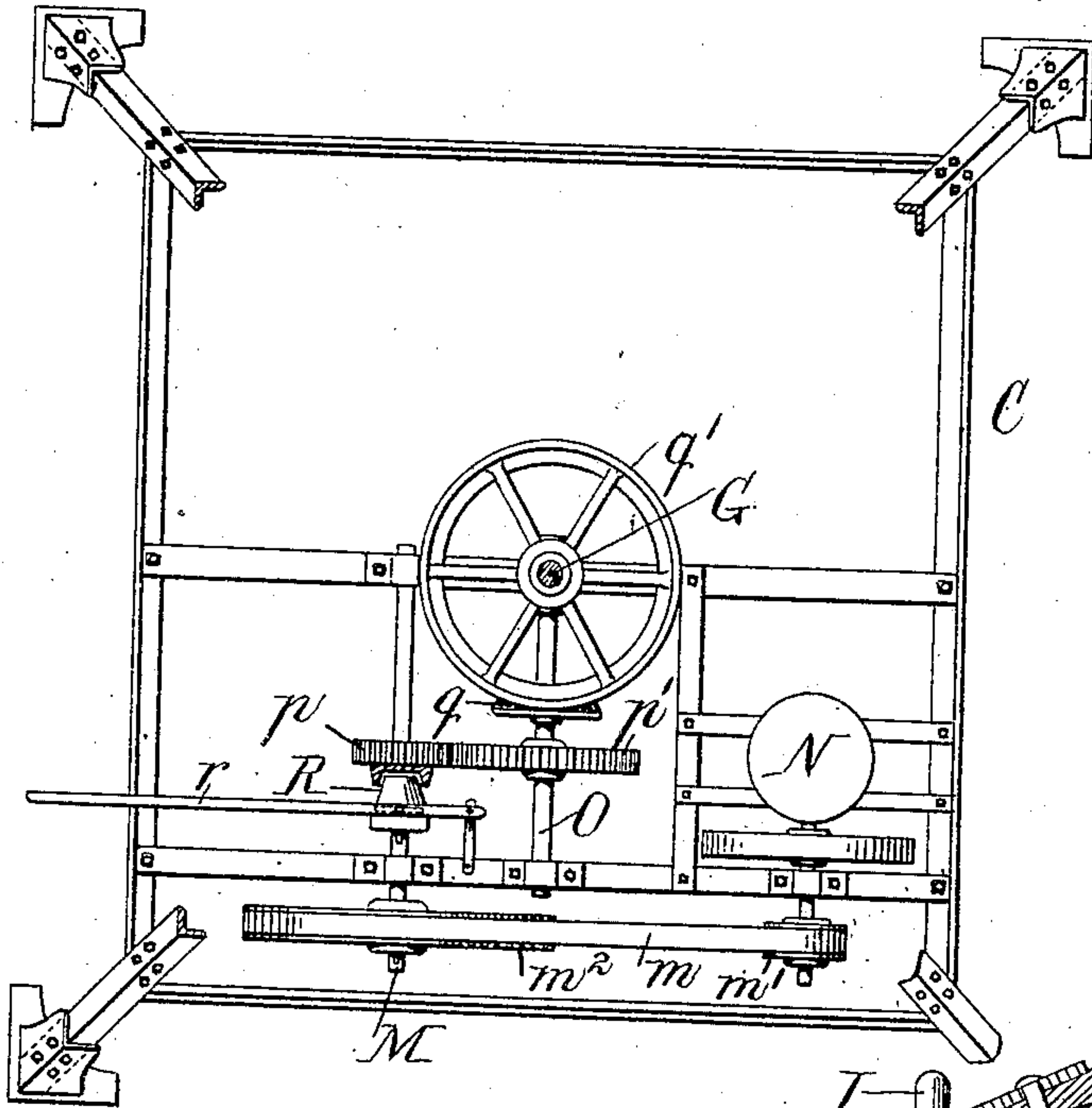


Fig. 2.

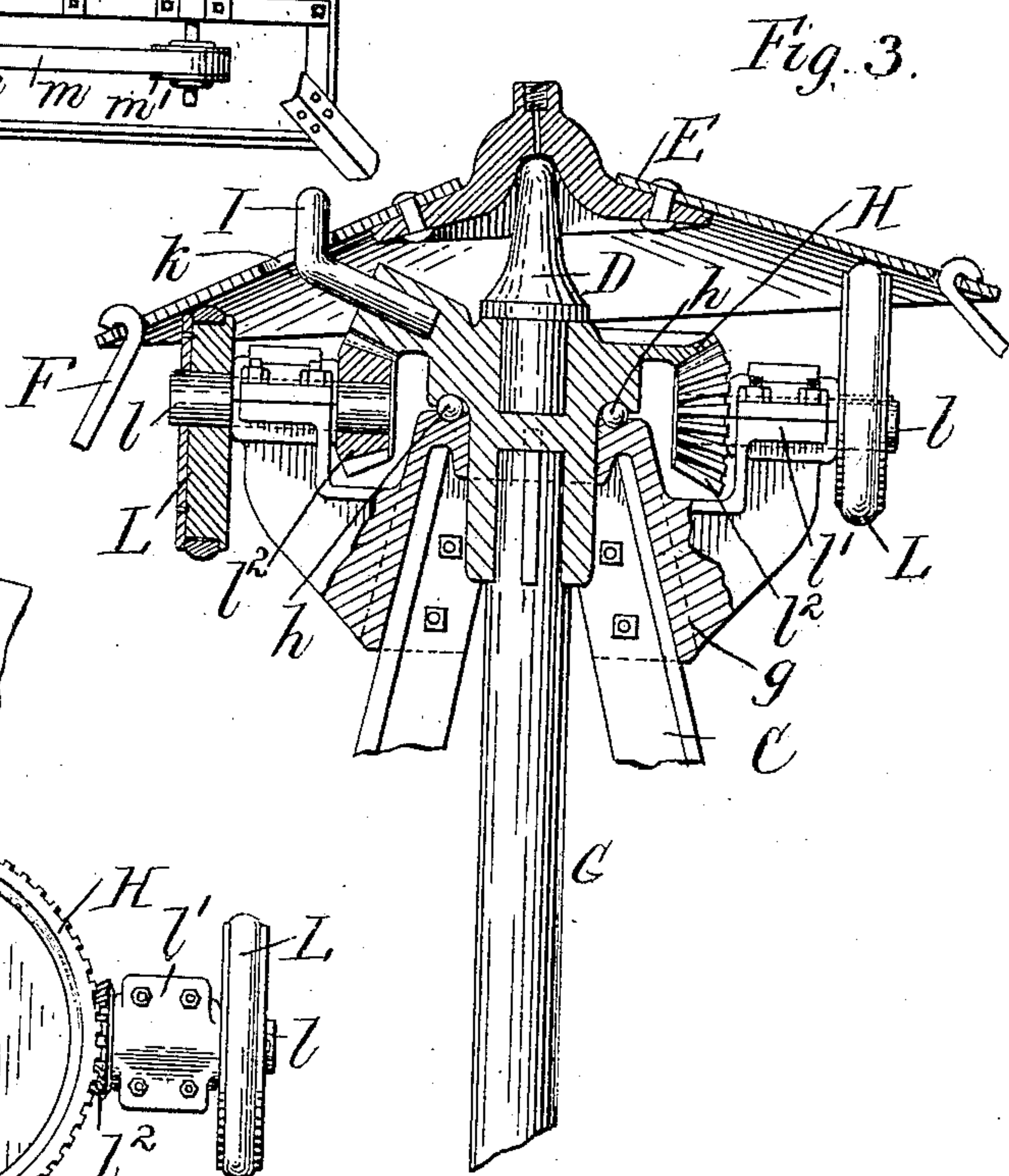
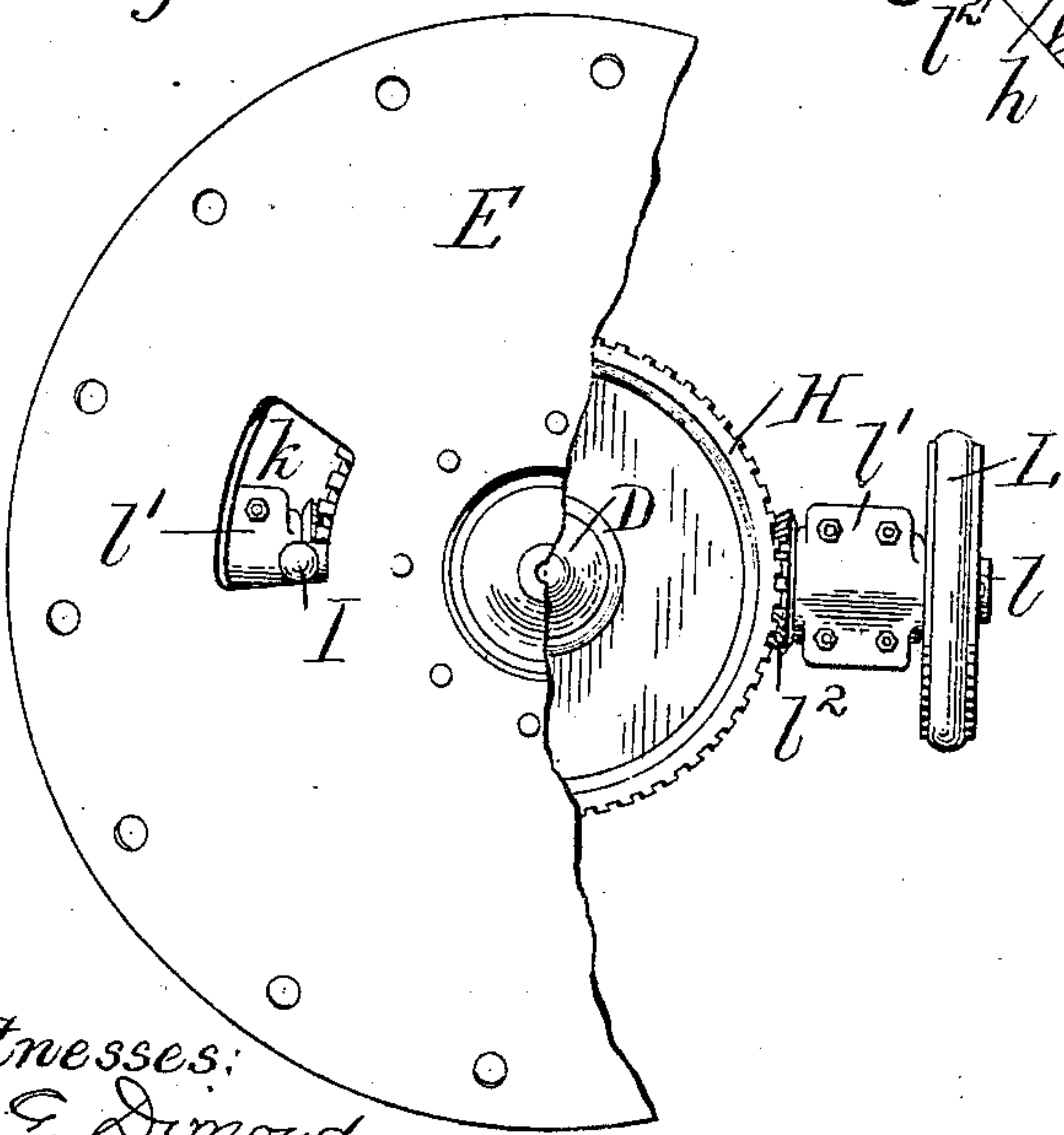


Fig. 3.

Fig. 4.



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# UNITED STATES PATENT OFFICE.

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## AMUSEMENT APPARATUS.

No. 863,133.

Specification of Letters Patent.

Patented Aug. 13, 1907.

Application filed August 2, 1906. Serial No. 328,876.

*To all whom it may concern:*

Be it known that I, JAMES W. ARMITAGE, a citizen of the United States, residing at North Tonawanda, in the county of Niagara and State of New York, have invented a new and useful Improvement in Amusement Apparatus, of which the following is a specification.

This invention relates to merry-go-rounds or amusement apparatus of that kind in which a circular platform or ring, upon which the occupants or persons sit, is suspended from a central tower or support so that it can revolve and also rock, tilt or oscillate, whereby an undulating or wave-like rotary motion of the platform is produced.

The primary object of the invention is to provide an apparatus of this sort with efficient, desirable and serviceable mechanism for driving and rocking the circular platform; to furnish means for controlling the rocking or undulating of the platform as desired; and to improve amusement apparatus of this type in the respects hereinafter described and set forth in the claims.

In the accompanying drawings, consisting of two sheets: Figure 1 is a side elevation of a merry-go-round or amusement apparatus embodying the invention. Fig. 2 is a horizontal sectional plan, on an enlarged scale, of the base portion of the supporting tower and driving mechanism for the platform. Fig. 3 is a sectional elevation, on an enlarged scale, of the upper end of the tower and the mechanism for revolving and rocking the platform. Fig. 4 is a plan view of the parts shown in Fig. 3, a portion of the bearing cap being broken away to expose the underlying parts.

Like letters of reference refer to like parts in the several figures.

A represents the circular platform or ring which carries the occupants or persons using the apparatus. The occupants can sit upon the platform, or if preferred, the platform can be provided with seats of any suitable kind for the occupants. In the machine shown a circular seat or bench B having a back *b* is carried by the platform. The platform is suspended so as to be free to revolve and rock or undulate from the upper portion of a central tower or support C. A skeleton tower is shown in the drawings but the construction thereof forms no part of the invention, and a center pole or any other suitable center support could be employed. The tower is provided at its top with a suitable center bearing D on which rests a bearing cap or plate E which is free to revolve and rock or undulate on the center bearing. The center bearing preferably consists of a pin having a semi-spherical upper end seated in a correspondingly shaped central socket in the underside of the cap. The platform or ring A is suspended from the bearing cap E by suitable rods, cables or other connections F. The suspending rods or connections are such that the plat-

form is not rigid with the cap but is capable of swinging or undulating to a greater or less extent than the cap.

G represents an upright drive shaft which is journaled at its upper and lower end in the tower C. Preferably the upper end of the shaft extends through a hole in a top bearing piece or casting *g* at the top of the tower, and a bevel gear wheel H is keyed or otherwise secured to the shaft to turn therewith and bears upon a circular row of bearing balls or rolling bearings *h* confined in a circular race formed by grooves in the underside of a shoulder on the hub of the wheel H and in the top of the bearing piece *g*. The bevel gear wheel H is provided with a cap driving arm I which extends upwardly and outwardly from the wheel through an opening *k* in the bearing cap. The bearing cap is thus caused to turn with the shaft G and wheel H but is free to rock, oscillate or undulate on its center bearing while revolving, the opening for the drive arm being large enough to allow such rocking of the cap. In the construction illustrated the center bearing pin D is seated in a central socket in the bevel gear wheel H in which it can be either loosely fitted or fixed.

L L represent eccentrics secured to the outer ends of horizontal shafts *l* which are journaled in suitable bearing *l'* on the top bearing piece of the tower and are provided at their inner ends with beveled gear pinions *l''* meshing with the beveled gear wheel H on the upright drive shaft. Two eccentrics are shown in the drawings, but this number is not essential and the number of eccentrics can be changed if found desirable. The bearing cap rests near its periphery on the eccentrics and the latter are so arranged on their shafts that the cap will bear on the highest point of the eccentric at one side of the cap and on the lowest point of the eccentric at the opposite side of the cap. When the upright shaft is rotated the beveled gear wheel H secured thereto will drive the beveled gear pinions *l''*, the eccentric shafts and eccentrics and at the same time the drive arm I will cause the bearing cap to revolve with the shaft and wheel H. As the bearing cap revolves, the rotating eccentrics will rock or oscillate the cap on its center bearing D and thereby rock or undulate the attached platform so as to produce an undulating or wave-like motion therein. The eccentrics are preferably equipped with loose wear rings or tires to reduce the friction and wear on the eccentrics and bearing cap. The described manner of arranging and driving the eccentrics and bearing cap is preferred, but other means for revolving the cap and driving the eccentrics could be utilized.

The upright drive shaft can be driven by any suitable mechanism. In the construction shown a horizontal drive shaft M is journaled in suitable bearings in the lower portion of the tower and is driven by a



belt *m* and pulleys *m'* *m*<sup>2</sup> from the shaft of a motor *N* of any suitable sort. The drive shaft *M* drives a horizontal counter shaft *O* through suitable gear wheels *p* *p'*, and the counter shaft *O* is provided with a gear pinion *q* 5 which meshes with and drives a beveled gear wheel *q'* fixed to the lower portion of the upright shaft *G*.

If the platform is driven too rapidly it will tend to remain in a horizontal plane, upon the principle that any rapidly revolving heavy body resists force tending 10 to move it out of its plane of rotation, and it will not partake to the full extent in the rocking or undulating motion of the bearing cap *E*. Means are therefore preferably provided for controlling the speed of rotation and thereby the undulation of the platform. For this 15 purpose the gear wheel *p* is loose on the horizontal drive shaft *M* and a clutch of some suitable sort is provided for connecting this wheel to and disconnecting it from the drive shaft at will. An ordinary friction clutch *R* is preferably employed as thereby the speed 20 of the bearing cap and platform can be gradually increased and decreased without producing a jerking or uneven motion thereof. The movable member of the clutch is operated by a hand lever or other suitable device *r*. In starting the platform the clutch is operated 25 to connect the wheel *p* with its shaft *M*, and the upright shaft *G*, bearing cap *E* and the eccentrics *L* *L* are set in motion through the drive means described. The rotating eccentrics cause the bearing cap to rock or undulate on the center bearing and this motion is communicated to the platform. If the speed increases so as 30 to prevent the desired undulation of the platform, the operator throws out the clutch until the speed sufficiently decreases. Thus by throwing the clutch in and out the speed of rotation of the platform and its undulation can be regulated as desired. 35

The eccentrics *L* *L* only have a throw of a few inches and the edge of the cap consequently will only rise and fall a few inches also, but the platform, which is not rigidly connected to the cap, will undulate to a proportionately greater or less extent than the cap, depending 40 upon its speed. If rotated rapidly, the platform will remain substantially in a horizontal plane notwithstanding the undulations of the cap, while by properly regulating the speed the platform can be made to dip 45 several feet. The described connections between the platform and cap also allow the former to start with a very slight or practically imperceptible undulation which increases gradually as the rotation of the platform continues. The driving mechanism is therefore 50 not subjected to the great strains which would fall upon it if the platform were rigidly connected to the cap.

I claim as my invention:

1. The combination of a center bearing cap supported to revolve and rock or undulate, a support therefor, means 55 for rotating said bearing cap, driven means mounted on said support which positively rock said bearing cap, an

annular platform, and suspension connections between said platform and cap which cause the platform to rotate with the cap but allow the platform to undulate to a greater or less degree than the cap, substantially as set forth. 60

2. The combination of a center bearing cap supported to revolve and rock or undulate, means for rotating said bearing cap, rotary eccentrics which revolve in contact with said cap and positively rock the same, a platform, and suspension connections between said platform and cap 65 which cause the platform to rotate with the cap but allow the platform to undulate to a greater or less degree than the cap, substantially as set forth.

3. The combination of a center bearing cap supported to revolve and rock or undulate, means for rotating said bearing cap, rotary eccentrics arranged beneath said cap and upon which the cap bears and which positively rock the same, a platform, and suspension connections between said platform and cap which cause the platform to rotate with the cap but allow the platform to undulate to a greater or 75 less degree than the cap, substantially as set forth.

4. The combination of a center bearing cap supported to revolve and rock or undulate, a rotary device having a loose connection with said bearing cap for positively rotating it, a positively driven rotary eccentric which is arranged below and revolves in contact with said bearing cap for rocking it, a platform, and suspension connections between said platform and cap whereby the platform participates in the movements of the cap, substantially as 85 set forth.

5. The combination of a center bearing cap supported to revolve and rock or undulate, a rotary wheel having a driving arm extending into a hole in said bearing cap, and eccentrics which are rotated by said wheel and engage said bearing cap to rock it, a platform, and suspension connections between said platform and cap which cause the platform to rotate with the cap but allow the platform to undulate to a greater or less degree than the cap, substantially as set forth. 90

6. The combination of a support, a rotating wheel journaled on said support and having a center bearing, a bearing cap resting centrally on said center bearing, a drive connection between said wheel and said bearing cap, eccentrics driven by said wheel and engaging said bearing cap, and a platform suspended from said bearing cap by connections which allow a relative movement between the cap and platform, substantially as set forth. 95

7. The combination of a center bearing cap supported to revolve and rock or undulate, driving means for rotating said bearing cap, driven means which positively rock said bearing cap, a platform, suspension connections between said platform and cap which cause the platform to rotate with the cap but allow the platform to undulate to a greater or less degree than the cap, and means for controlling the speed of said driving means, substantially as set forth. 100

8. The combination of a supporting structure, a driven wheel journaled thereon and provided with a center bearing, a cap on said center bearing, means which cause said cap to rotate with said wheel and allow the cap to rock or undulate an eccentric arranged below said cap driven by said wheel and engaging said cap for rocking it, and a platform connected to and operated by said cap, substantially as set forth. 105

Witness my hand, this 27 day of July, 1906.

JAMES W. ARMITAGE.

Witnesses:

JAMES H. MUNDIE,  
R. S. PATTEN.