

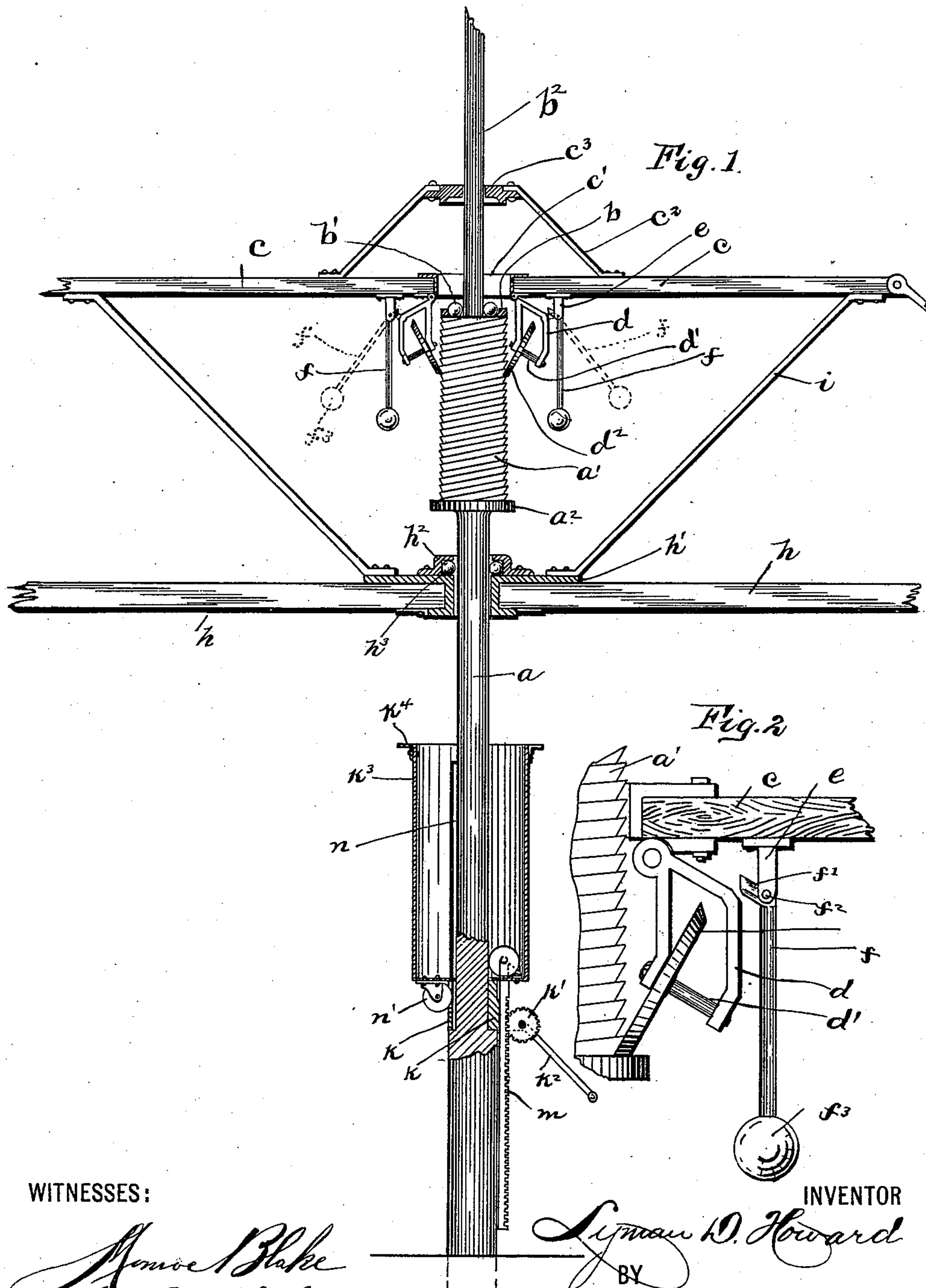
(No Model.)

2 Sheets—Sheet 1.

L. D. HOWARD.  
MERRY-GO-ROUND.

No. 564,409.

Patented July 21, 1896.



WITNESSES:

*Monroe Blake*  
*A. L. Phelps*

INVENTOR

*Lyman D. Howard*

BY

*C. C. Shepherd*  
ATTORNEY

(No Model.)

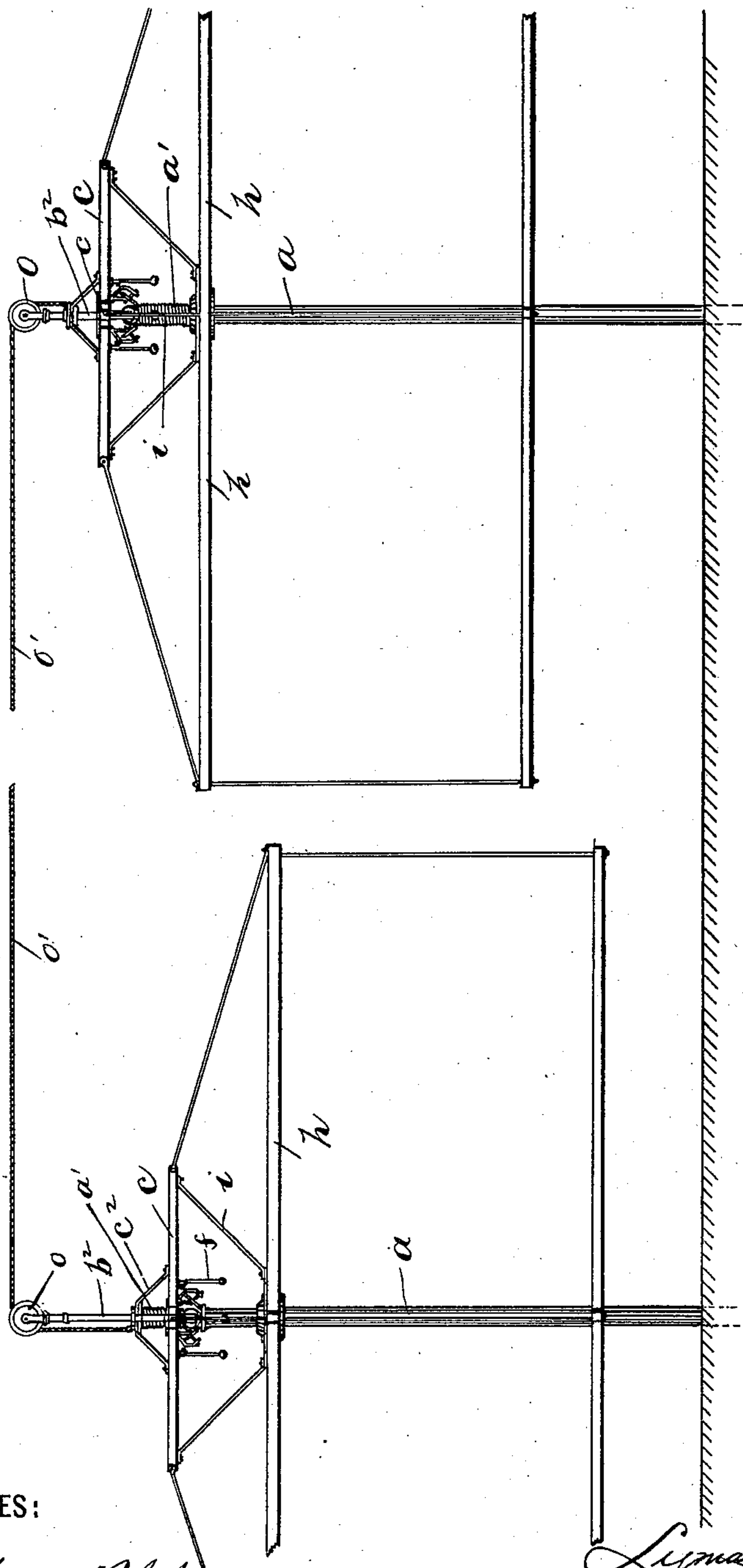
2 Sheets—Sheet 2.

L. D. HOWARD.  
MERRY-GO-ROUND.

No. 564,409.

Patented July 21, 1896.

Fig. 3



WITNESSES:

*Monroe Blake.*  
*A. L. Phelps*

INVENTOR

*Lyman D. Howard*  
BY *C. C. Shepherd*  
ATTORNEY



# UNITED STATES PATENT OFFICE.

LYMAN D. HOWARD, OF NELSONVILLE, OHIO.

## MERRY-GO-ROUND.

SPECIFICATION forming part of Letters Patent No. 564,409, dated July 21, 1896.

Application filed February 17, 1896. Serial No. 579,501. (No model.)

*To all whom it may concern:*

Be it known that I, LYMAN D. HOWARD, a citizen of the United States, residing at Nelsonville, in the county of Athens and State of Ohio, have invented a certain new and useful Improvement in Merry-Go-Rounds, of which the following is a specification.

My invention relates to the improvement of merry-go-rounds or carousels, and the objects of my invention are to provide a merry-go-round mechanism of superior construction and arrangement of parts, to provide improved means for imparting an automatic rotary motion to the traveling frame, and to produce other improvements in details of construction, which will be more fully pointed out hereinafter. These objects I accomplish in the manner illustrated in the accompanying drawings, in which—

Figure 1 is a central vertical section of my improved supporting and rotating mechanism, showing, however, a portion of the parts thereof in elevation. Fig. 2 is a detail view in elevation, illustrating the position of the frame-carrying wheels when the latter have descended to their lowest position; and Fig. 3 is a detail view in elevation, illustrating the relative positions of two of the connected merry-go-rounds.

Similar letters refer to similar parts throughout the several views.

$a$  represents a vertical standard or column, which is rigidly supported in any desired manner. This standard supports or has formed therewith in its upper portion a screw or track column  $a'$ , the latter being provided with spiral tracks or threads of the desired number, although four of said tracks are intended to be illustrated in the accompanying drawings.

At the bottom of the screw thus formed is provided a circular flange  $a^2$ , while on the top of said screw is supported a suitable bearing-ball receptacle  $b$ , in which are arranged bearing-balls  $b'$ , said balls having a bearing on their inner sides against a vertical upwardly-extending stem  $b^2$  of the screw  $a'$ , said stem being preferably of less diameter than said screw.

$c$  represents radial arms from which the weight of the merry-go-round is supported in the manner hereinafter described. These radial arms, of which there are preferably four,

although any desired number may be employed, have their inner ends inclosed within suitable sockets formed in the periphery of a collar or ring  $c'$ , which passes loosely about the stem  $b^2$ .

$c^2$  represents brace-arms, the lower ends of which are connected with the upper sides of the radial arms  $c$  and the upwardly and inwardly extending end portions of which are connected with a ring-plate  $c^3$ , which fits loosely about the stem  $b^2$  at a point above the collar  $c'$ .

To the under side of each of the arms  $c$ , adjoining the collar  $c'$ , is pivoted or hinged the upper inner corner of a hanger  $d$ , the latter being of the substantially inverted-U shape shown and having its upper side inclined upward and inward. Between the lower ends of the side arms of each of these hangers is journaled an inclined wheel-carrying shaft  $d'$ , the angle or inclination of each of these shafts being such as to result in the wheels  $d^2$ , which are mounted thereon, having their beveled peripheries bearing on the track-threads of the screw  $a'$  when the hanger is supported in its natural position. The inclined or tangentially-supported wheels  $d^2$  are adapted to bear upon a separate trackway of the screw, there being formed an equal number of trackways and wheels. On the outer side of each of the hangers  $d$  I provide the under sides of the arms  $c$  with a suitable depending bracket  $e$ .

$f$  represents a brake rod or arm which, as indicated in the drawings, is provided with an inturned upper end portion or dog-head  $f'$ . One of these brake-rods or dogs thus formed is pivoted at the junction of its head and body, at a point  $f^2$ , to the lower portion of each of the brackets  $e$ . As shown in the drawings, the inclined head  $f'$  of the dog or brake-rod is adapted when the body of the latter is in its vertical position to extend to within close proximity of the upper portion of the adjacent hanger  $d$ . The lower end of the rod  $f$  is provided with a suitable weight  $f^3$ .

$h$  represents the usual radially-arranged carriage-supporting arms, the inner ends of which are inserted within the sockets of a suitable ring-plate  $h'$ , which loosely surrounds the standard  $a$  below the screw. This ring-plate is preferably provided, as indicated in



the drawings, with a boxing  $h^2$ , within which are mounted bearing-balls  $h^3$ , adapted to form an antifrictional bearing for the standard  $a$ . The ring-plate  $h$  is connected with the arms  $c$  by means of upwardly-extending and outwardly-inclined connecting-arms  $i$ .

From the arms  $h$  are adapted to be supported in any desirable manner the usual passenger-carriages.

Where a single carousel or merry-go-round is to be used, I employ, as indicated in Fig. 1 of the drawings, a fixed collar  $k$ , which surrounds the standard at a point in its lower portion and from which is journaled on one side thereof a pinion-wheel  $k'$ , the latter being provided with a crank-handle  $k^2$ . Loosely surrounding the standard and adapted to be supported upon the collar  $k$  is a cylinder  $k^3$ , and from the lower end of this cylinder extends downward, adjacent to the base of the standard, a vertical rack  $m$ , with which said pinion-wheel  $k'$  is adapted to engage. On one side of the standard  $a$ , and running upward from the collar  $k$ , I provide a track-plate  $n$ , on which is adapted to bear a guide-wheel  $n'$ , the latter being journaled in a suitable bracket depending from the under side of the cylinder. The cylinder  $k^3$  is preferably provided with a flange-head, as indicated at  $k^4$ .

By reference to the drawings it will be observed that the construction of my improved device is such that when the wheels  $d^2$  are at the lower end of the screw and resting in the flange  $a^2$  the ring-plate  $c^3$  is bearing upon the balls  $b'$  at the head of the screw and the arms  $h$  are supported in close proximity to the upper end of the cylinder  $k^3$ , the latter being in its lowest position. In the above-described position it is evident that the weighted dogs  $f$  will remain in the substantially vertical position indicated in full lines in the drawings.

In order to elevate the rotating framework of my device to an operating position, the crank  $k^2$  and its pinion  $k'$  may be rotated, resulting in the elevation of the rack and consequent elevation of the cylinder  $k^3$ , until the latter is in contact with the under side of the arms  $h$ . By then continuing the rotary movement of said crank-handle it will be seen that said arms  $h$  and their load will be moved upward, the wheels  $d^2$  passing loosely over the upwardly-inclined teeth or track-threads of the screw, until said wheels are in the upper portions of their respective tracks. This having been accomplished, suitable means may be provided for so engaging the crank-handle as to temporarily prevent its rotation in the opposite direction, and the passengers may then take their places in the carriages, which are thus supported in an elevated position, said carriages being reached by a suitable elevated platform or otherwise. The carriages being thus loaded, the crank-handle may be released, and by its reversed rotation the cylinder may be allowed to descend to the position indicated in Fig. 1 of the drawings. The support being thus taken from the cylin-

der is transferred, as will readily be seen, to the wheels  $d^2$ , which are upon the track-threads, and through the weight of the rotary framework and its load said wheels are caused to travel around and down their respective threads, resulting in a comparatively rapid rotary motion of the carriage-supporting framework. The centrifugal force imparted by the rotary motion described must result in the weighted dogs  $f$  swinging outward and remaining substantially in the dotted positions indicated in Fig. 1 of the drawings during the downward progress of the wheels. This outward movement of said dog-arms must result in their heads coming into contact with the outersides or lower end portions of the hangers  $d$ , thereby acting as safety-brakes to prevent any possibility of the wheel-supporting hangers swinging outward and causing a disengagement of the wheels with their track-threads.

It is obvious that the distance traveled by the passengers must in some measure be governed by the length of the track-threads over which the wheels travel, although it is evident that the impetus or rotary force acquired by the rotating frame must of necessity result in a number of continued rotations of the frame after the wheels have left the threads and the weight of the rotary frame has been transferred to the plate-ring  $c^3$ , which bears upon the balls  $b'$ .

Although I have shown and described means for raising the rotary framework to an operative position, it is evident that other suitable means may be employed for this purpose.

As indicated in Fig. 3 of the drawings, it will be seen that I may employ two of the merry-go-rounds or carousels of the character hereinbefore described in conjunction with each other, that is, two of said mechanisms may be arranged in proper relative positions and each of the stems  $b^2$  may have mounted therein a pulley  $o$ , and the rotary frames of the two machines may be connected by a cable or rope  $o'$ , which passes upward over said pulleys. By this connection it is evident that the carriages of one of said machines being loaded, and thereby caused to travel downward in the manner hereinbefore described, the remaining machine containing empty carriages will from the weight of said loaded machine be elevated proportionately. In this manner it will be seen that means will be provided for automatically and alternately raising and lowering the rotating frameworks to their different positions and that in case this connection is employed the necessity of the employment of other means for raising and lowering said framework is entirely obviated.

From the construction and operation which I have described it will be seen that simple and reliable means are provided for imparting the desired movement to the rotary frame of a carousel and that said means are such as to obviate the necessity of employing steam



or other similar propelling power such as is ordinarily employed in the operation of carousels or merry-go-rounds.

The construction of my device is such as to render its operation positive and safe, and it is obvious that the changes in speed, traveling distance, &c., may be accomplished as desired by changes in the length of the screw, pitch of its track-threads, &c.

It is obvious that the means employed herein to impart rotary motion may be adapted for use in imparting similar motion for other purposes, such, for instance, as the rotating of platforms for window displays or in any case where it is desirable to convert vertical rectilinear motion to a horizontal rotary motion.

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

1. The combination of a spirally-threaded column, a rotating frame, inclined wheels journaled in said frame, said wheels bearing and adapted to run on said spiral-column threads substantially as and for the purpose specified.

2. In a merry-go-round the combination with a spirally-threaded column and a framework adapted to rotate about said column, of hangers jointedly connected with said frame, an inclined shaft in each of said hangers and wheels mounted on said shafts and running in the threads of said column, substantially as and for the purpose specified.

3. In a merry-go-round construction the combination with a spirally-threaded column and a framework adapted to rotate about said column, two or more wheels carrying hangers jointedly connected with said frame and means for automatically retaining the wheels of said hangers on the threads of said column when said frame is rotating substantially as and for the purpose specified.

4. In a merry-go-round the combination with a spirally-threaded column and a framework adapted to rotate about said column, of hangers jointedly connected with said frame, wheels journaled in said hangers, weighted dogs pivotally supported from said frame, the heads of said dogs being adapted by centrifugal force imparted by the rotary motion of

said frame to be thrown into contact with said hangers and thereby retain the wheels of the latter on the threads of said column substantially as and for the purpose specified.

5. In a merry-go-round the combination with a vertical standard, a spirally-threaded column portion thereon, a vertical stem extension of said column and a set of bearing-balls about said stem at the head of said column, of a rotary framework, hangers jointedly connected with said framework and inclined wheels journaled in said hangers and adapted to run on the threads of said column, a ring-plate supported above and from said frame, said ring-plate adapted when said wheels are at the bottom of the column to rest and run on said bearing-balls substantially as and for the purpose specified.

6. In a merry-go-round the combination with a standard, a spirally-threaded column thereon, a framework adapted to rotate about said column and standard, wheel-carrying hangers jointedly connected with said framework, the wheels of said hangers being adapted to run on the threads of said column and means for supporting said framework when said wheels are at the bottom of the column, of a cylinder surrounding said standard below said framework, a rack depending from said cylinder and a pinion-wheel journaled from said standard, the teeth of said wheel engaging with said rack, said cylinder being adapted when elevated to come into contact with and raise said rotating frame substantially as and for the purpose specified.

7. In a merry-go-round construction the combination with two vertical standards, a spirally-threaded column on each of said standards, a rotary framework adapted to travel about each of said columns and standards, said frameworks having wheel-bearings on the threads of said columns, a pulley arranged above each of the columns and a rope connecting the upper end portions of said rotary frames and running over said pulleys substantially as and for the purpose specified.

LYMAN D. HOWARD.

In presence of—

ASHER BUCKLEY,  
R. H. JACKSON.