

J. FROMM.
MERRY-GO-ROUND.

(Application filed Aug. 23, 1902.)

(No Model.)

3 Sheets—Sheet 1.

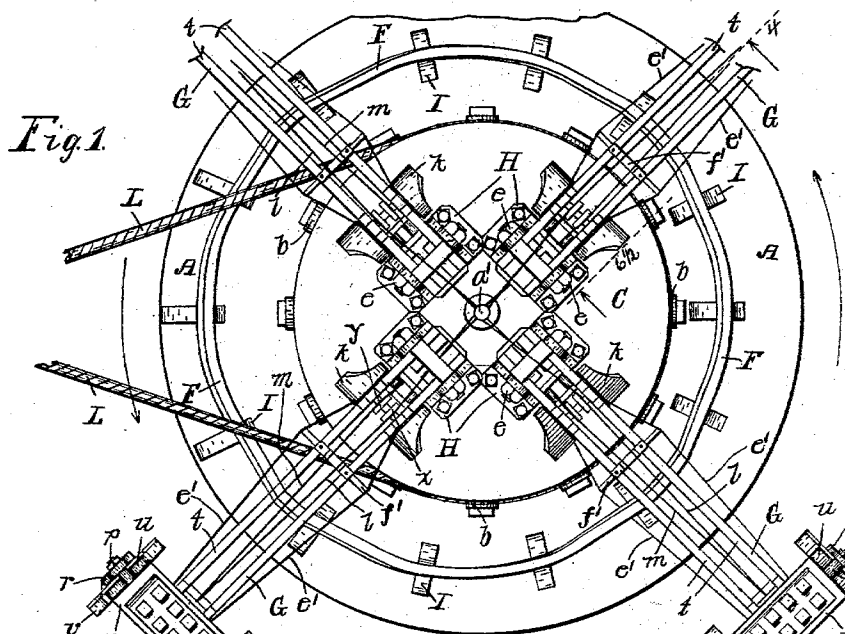


Fig. 1.

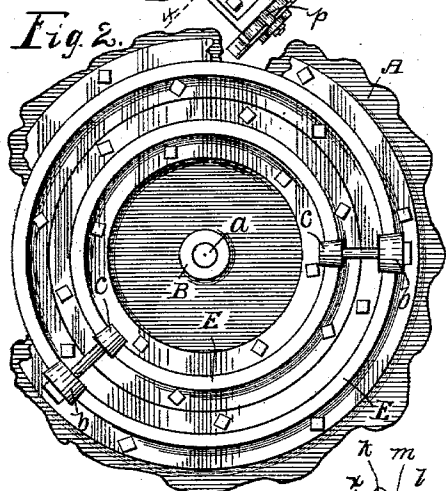


Fig. 2.

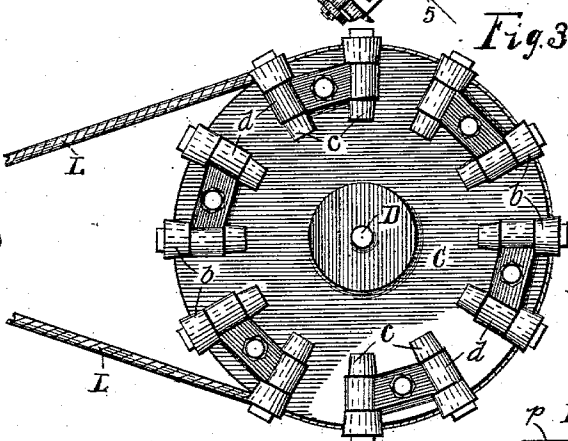


Fig. 3.

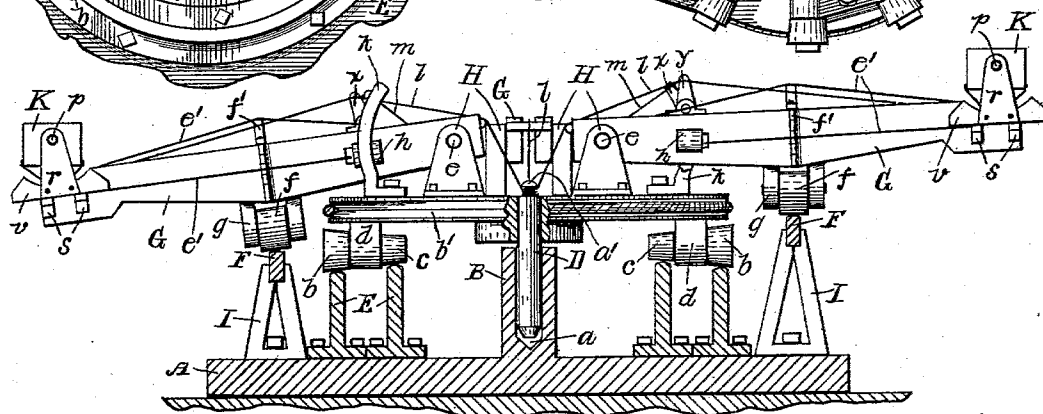


Fig. 4.

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Julius Fromm,
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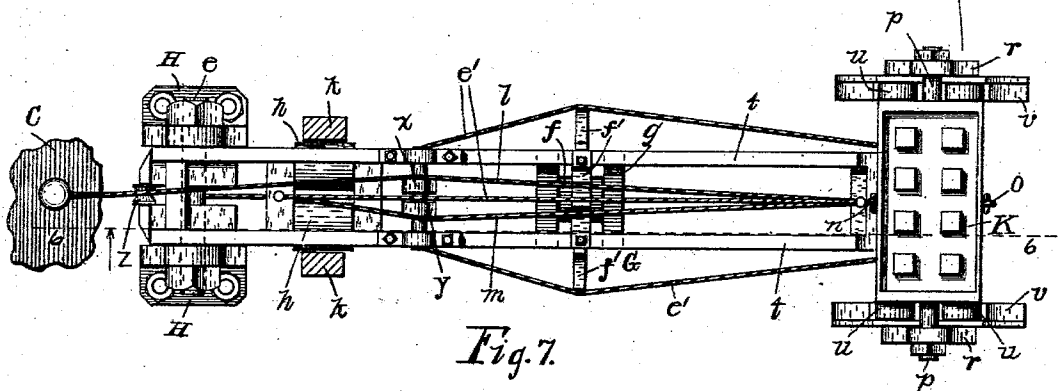
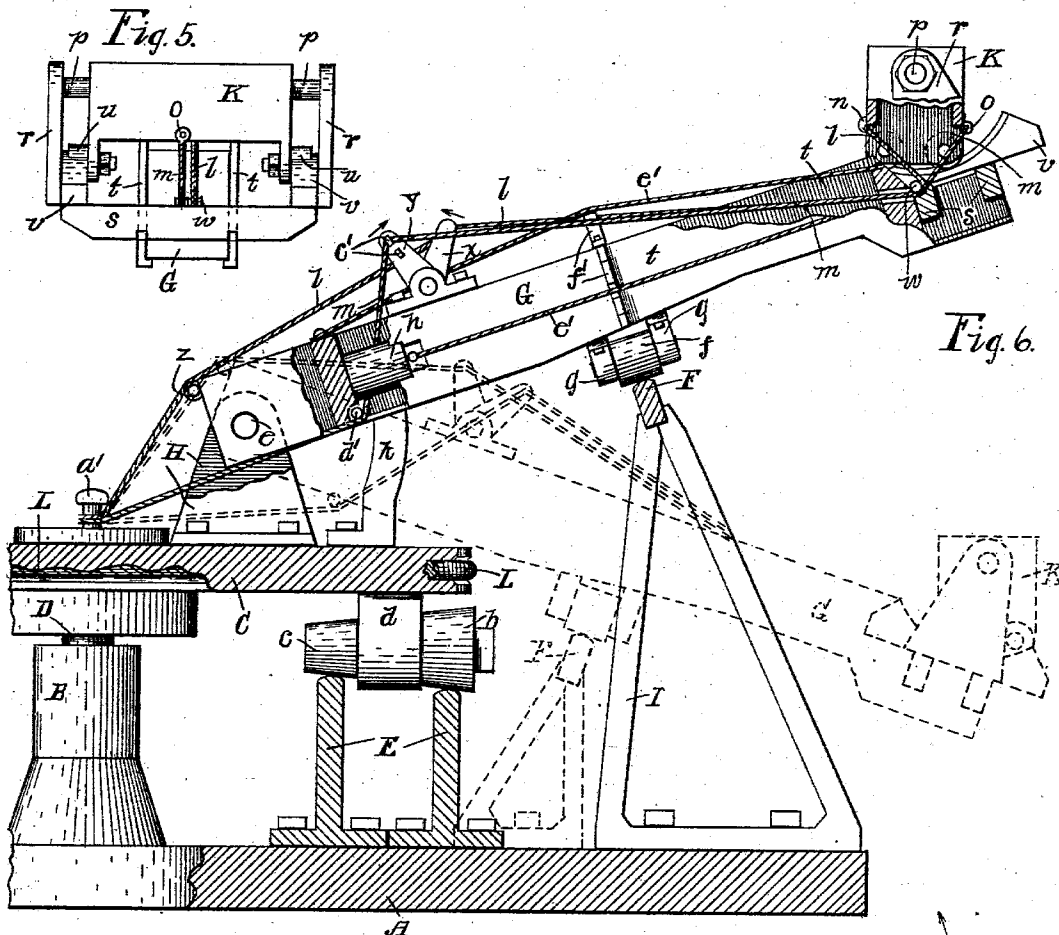
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Fig. 8

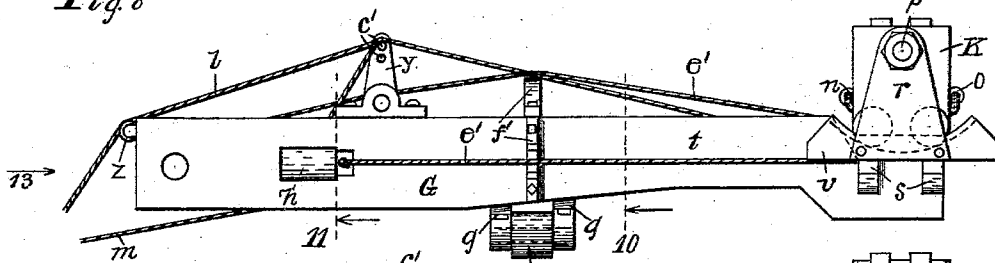


Fig. 9

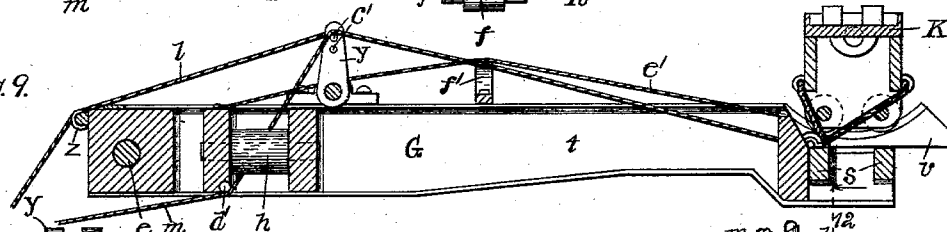


Fig. 10

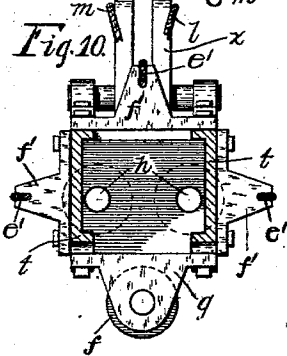


Fig. 11

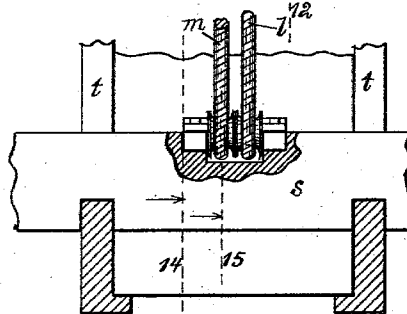
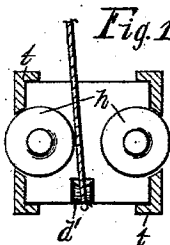


Fig. 12

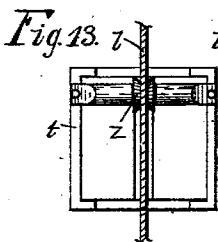


Fig. 13

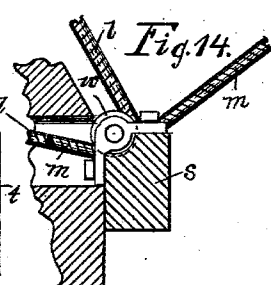


Fig. 14

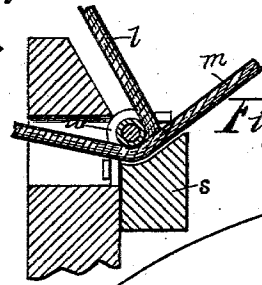


Fig. 15

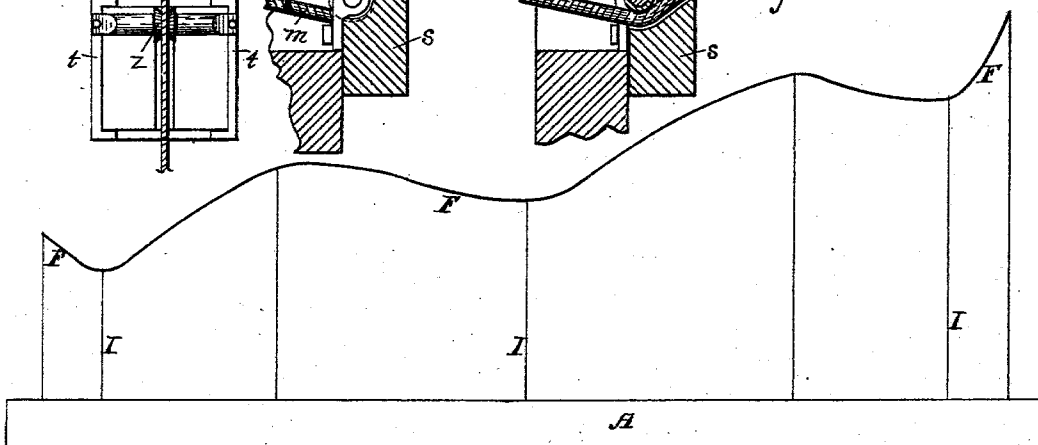


Fig. 16

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UNITED STATES PATENT OFFICE.

JULIUS FROMM, OF ROCHESTER, NEW YORK.

MERRY-GO-ROUND.

SPECIFICATION forming part of Letters Patent No. 716,700, dated December 23, 1902.

Application filed August 23, 1902. Serial No. 120,857. (No model.)

To all whom it may concern:

Be it known that I, JULIUS FROMM, of Rochester, in the county of Monroe and State of New York, have invented a new and useful
5 Improvement in Merry-Go-Rounds, which improvement is fully set forth in the following specification and shown in the accompanying drawings.

My invention is a device for furnishing
10 amusement to assemblages of people, as at parks, watering-places, or other pleasure resorts, the invention belonging to the class of devices commonly known as "carousels" or "merry-go-rounds."

15 This invention, which I style "ocean-wave merry-go-round," has for one object the giving to the seat cars or platforms carrying the passengers a series of graduated waving motions or alternated vertical movements up-
20 ward and downward while they are being carried around in a circle.

Another object of the invention is to so hang or support the cars that they may have motions around horizontal axes while being
25 carried around the circle.

A further object of the invention is to provide means for automatically turning or rocking the cars on their horizontal axes during their vertical movements to keep the floors
30 of the cars constantly horizontal.

Other objects and advantages of the invention will be brought out and made to appear in the following specification, reference being had to the accompanying drawings, forming a part thereof.
35

The device is so constructed that the aggregated interrupted lifts or elevations of the cars at one side of their circular orbits cause them to be high from the ground, while a
40 corresponding series of interrupted falls or depressions at the other side of the orbits carry the cars low down.

The invention is hereinafter fully described, and more particularly pointed out in the
45 claims.

Figure 1 is a plan of the device with parts broken away and omitted. Fig. 2 is a plan view showing the circular tracks, parts being broken away. Fig. 3 is a view of the under surface of the carrying-platform and associated parts. Fig. 4 is a side elevation of

the device, parts being diametrically sectioned, as on the dotted line 4 4 in Fig. 1, and other parts omitted. Fig. 5 is a view at the end of one of the carrying-arms, seen as indicated by arrow 5 in Fig. 1. Fig. 6 is a side
55 elevation of a carrying-arm and associated parts, parts being broken away and other parts shown in various positions by full and dotted lines, parts of the carrying-arm being
60 longitudinally sectioned on the dotted line 6 6 in Fig. 7, the base and the tracks being radially sectioned, as on the dotted line 4 4, and the platform sectioned on the dotted line
65 $6\frac{1}{2}$ in Fig. 1. Fig. 7 is a plan of one of the carrying-arms detached, more fully showing the structure. Fig. 8 is a side elevation of a carrying-arm. Fig. 9 is a longitudinal section of a carrying-arm and car, taken on the
70 dotted line 6 6 in Fig. 7. Fig. 10 is a vertical transverse section of a carrying-arm, taken on the dotted line 10 in Fig. 8. Fig. 11 is a similar section of the arm, taken on the dotted line 11 in Fig. 8. Fig. 12 is a view of
75 parts at the end of a carrying-arm, the section being taken on the vertical dotted line 12 in Fig. 9, parts being broken away. Fig. 13 is an inner end elevation of a carrying-arm, indicated by arrow 13 in Fig. 8. Fig. 14 is a vertical cross-section of the inner cross bar
80 or sill under the car, taken as on the dotted line 14 in Fig. 12, showing the manner of holding the adjacent cord-pulleys. Fig. 15 is a similar section of the parts, taken on the dotted line 15 in Fig. 12, further showing the
85 relation of the cords and the pulleys. Fig. 16 is a skeleton figure showing by single line the sinuosity of the roller-track. Figs. 10 to 16, inclusive, are drawn to various scales
90 larger, and Figs. 1 to 4, inclusive, to a scale smaller, than that of the remaining figures.

A in the drawings is a level base of any suitable kind and perimeter for supporting the superstructure.

B, Figs. 2, 4, and 6, is a vertical center post
95 or low tower rising from the base A, around the axis of which the moving parts revolve.

C is a horizontal platform over the base A, provided with a stout central pivot-pin D, occupying and adapted to turn in a cavity a
100 in the center post B, the platform being revolved by some common means, as by a cable

L, Figs. 1, 3, 4, and 6, in a peripheral groove b' in the platform, leading from some suitable motor.

E E are a pair of circular tracks concentric with the axial pin D, the outer track being the lower, upon which conical wheels $b c$ roll as the platform C is revolved, the wheels being held by hangers d , secured to the under face of the platform, as appears in Fig. 3.

A series of radial overhanging carrying-arms G, Figs. 1, 4, 6, 7, 8, and 9—four, more or less, in number—project from the platform C, being supported at their inner ends in rigid standards H, secured to the platform. These arms are held upon horizontal axial pins e , passing through the standards at equal distances above the platform and from the axis of its motion, the pins all following in the same circle as the platform revolves. Thus hung upon the pins the arms may have vertical motions as they go around, their outer ends carrying seat cars or inclosures K for the riders. The arms G are open through the middle, each being formed with broad side beams t , joined in vertical planes and provided with a pair of parallel horizontal cross-sills $s s$, Figs. 4, 5, 6, 8, 9, and 12, at the outer end. The cars K are held to turn or swing laterally upon end trunnions p , resting in standards r , rising from the sills $s s$, as shown. I prefer also, as a matter of safety, to provide the cars with wheels u at their ends, circular tracks v , concentric with the trunnions p , being also provided for the wheels, the tracks being supported by the bars s , as shown. The carrying-arms G are further supported near the middle of each by an irregular and sinuous rail or track F, Figs. 1, 4, 6, and 16. This rail encircles the center post B and is supported by standards I of unequal height and slant, secured to the base A, as shown. Each arm G is provided with a roller f beneath it to roll along the rail F as the arms are carried around by the revolving platform C, the roller being held by hangers g , secured to the arm. The rail F is irregular as to elevation, it being high above the base A at one side of the center post B and low at the other side of the post, its extreme high and extreme low positions and the highest and the lowest supporting-standards I being shown by full and by dotted lines in Fig. 6. This rail, furthermore, is not a true circle, but sinuous in plan, some parts being nearer to and other parts farther from the post B, the lower parts of the rail being near the post; but whether high or low every part of the rail is the same distance from the circle, followed by the axial pins e as the parts are revolved.

The two sections of the rail F between the highest and the lowest points are not true inclines, but two series of alternated or interrupted ascents and descents, as appears in Fig. 16. From the lowest around to the highest point of the rail the sum of the ascents or upward slopes exceeds the descents, the latter exceeding the former when moving from

the highest to the lowest point of the rail. This unevenness and alternated sloping of the track F gives to the overhanging seat-cars K a continuous tilting or waving motion as they are carried around, giving to the riders sensations similar to those experienced while in a speeding boat rocked by the waves.

Automatic means are provided in this device for causing the floors of the seat-cars to remain horizontal while the cars are carried upward and downward by the arms G. This maintaining of the horizontality of the car-floors is effected by means of a pair of oppositely-acting cables $l m$, Figs. 1, 4, 6, 7, 8, and 9. These cables are attached one at either side of each car in rings $n o$, respectively, and carried under independent pulleys $w w$, Figs. 14 and 15, secured to the inner cross-sill s . Thence the pair of cables extend over rests c' on independent rock-arms $x y$ upon the carrying-arm G and inward to the center of the platform C, where they are made fast to a stud a' , rigid in the platform. The cable l , which is connected to the inner or rear side of the seat-car and carried by the rock-arm x , passes over a roller z , Figs. 6 to 9 and 13, at the extreme inner end of the arm G on its way back to the stud a' , while the companion cable m , secured to the opposite or outer side of the car and controlled by the rock-arm y , passes beneath a roller d' , Figs. 6, 9, and 11, at the lower side of the arm G to its hold upon the stud a' . By means of these cables the car is turned on its trunnions $p p$ as it is carried alternately upward and downward by the tilting arm G in a manner to keep the floor always horizontal. This is effected by carrying the cable l over the high roller z and the cable m under the lower roller d' . By observing the high and the low positions of the carrying-arm G (shown by full and by dotted lines in Fig. 6) it will be seen that when the arm is high the strain on the cable l at the roller z is lessened, the angle of the cable there being flat or very obtuse, while the tension on the cable m at d' is increased. This swings the rock-arm y backward and pulls downward on the bearing of the cable m at o on the car, holding the latter upright, as appears in full lines. A descent of the arm G to its position shown by dotted lines reverses the stresses on the cables $l m$, tending to more sharply bend the former at z and straighten the latter at d' , thus shifting the downward pull on the car to the inside at n , and so keep the car level. The cables are held so as not to slip at their rests c' on the rock-arms $x y$, the said arms having seesaw motions by each other during the tilting of the carrying-arms G.

I usually find it desirable to construct the carrying-arms with stiffening-cables e' at the sides and over the top, secured at their ends and passing over bridges f' , as shown, though these are not essential to my invention.

Each arm G is provided with a pair of horizontal longitudinal rollers $h h$, Figs. 1, 4, and 6 to 11, with their convex sides projecting

slightly through openings in the sides *t* of the arms to touch guide-standards *k*, rigid with the platform *C*, to steady the arms in their vertical movements.

5 What I claim as my invention, and desire to secure by Letters Patent, is—

1. A merry-go-round comprising a center post, a revolving platform held pivotally by the center post, circular tracks, and wheels
10 on the platform to traverse the tracks, a series of carrying-arms projecting from the platform, rollers on the carrying-arms, and a sinuous track for the rollers around the platform having parts at different distances from the axial line of said center post, substantially as set forth.

2. A merry-go-round comprising a center post, a revolving platform held pivotally by the center post, circular tracks, and wheels
20 on the platform for the tracks, a series of pivotal carrying-arms projecting from the platform, rollers on the carrying-arms, and an uneven track for the rollers, encircling the center post and having parts at different distances from the axial line of said center post, substantially as shown and described.

3. A merry-go-round comprising a center post, a revolving platform held pivotally by the center post, circular tracks, and wheels
30 on the platform to traverse the tracks, a series of pivotal carrying-arms projecting from the platform, rollers on the carrying-arms, and a track for the rollers, around the platform, high at one side of the latter and low at the other, the intermediate parts of the track between high and low being composed of upward and downward slopes alternated and at different distances from the axial line of said center post, substantially as and for
35 the purpose set forth.

4. A merry-go-round comprising a center post, a revolving platform held pivotally by the center post, circular tracks, and wheels
40 on the platform to traverse the tracks, a series of pivotal carrying-arms projecting from the platform, rollers on the carrying-arms, and a track for the rollers, encircling the center post, parts of the track being differently elevated and at different distances from the axial line of said center post, substantially as shown and described.

5. A merry-go-round comprising a center post, a revolving platform held pivotally by the center post, circular tracks, and wheels
45 on the platform to traverse the tracks, a series of overhanging radial carrying-arms held pivotally in standards carried by the platform, passenger-cars carried at the outer ends

of the carrying-arms, rollers on the carrying-arms, and an irregular or sinuous track for the rollers every point of the track being equidistant from the circle followed by the axes of the carrying-arms, substantially as and for the purpose specified.

6. A merry-go-round comprising a revolving platform, a series of tilting carrying-arms overhanging the platform, pivotal cars at the outer ends of the carrying-arms, and a track encircling the center post and having portions elevated and at different distances from the axial line of said center post and means for turning the cars on their pivotal bearings, substantially as and for the purpose set forth.

7. A merry-go-round comprising a revolving platform, a series of tilting carrying-arms overhanging the platform, cars held upon trunnions at the outer ends of the carrying-arms, and controlling-cables secured to the cars and to bearings on the platform, substantially as and for the purpose specified.

8. A merry-go-round comprising a revolving platform, a series of tilting carrying-arms overhanging the platform, cars held upon trunnions at the outer ends of the carrying-arms, and controlling-cables secured to the cars and to bearings on the platform, the cars being provided with wheels, and circular tracks for the wheels, substantially as shown and described.

9. A merry-go-round comprising a revolving platform, a series of tilting carrying-arms overhanging the platform, provided with rock-arms, tilting cars at the outer ends of the carrying-arms, cables secured to the opposite sides of each car and to a bearing on the platform, the cables passing over bearings on the respective rock-arms, and rollers on the carrying-arms to guide the cables, substantially as shown and described.

10. A merry-go-round comprising a revolving platform and supports therefor, a series of pivotal carrying-arms held by the platform, and means for tilting the carrying-arms in vertical directions, and guides on the platform and horizontal longitudinal rollers on said arms engaging said guides for steadying the vertical motions of the carrying-arms, substantially as shown and described.

In witness whereof I have hereunto set my hand, this 20th day of August, 1902, in the presence of two subscribing witnesses.

JULIUS FROMM.

Witnesses:

ALBERT F. STRASSEL,

JOSEPH A. WARTINGER.