LA MARCUS A. THOMPSON.

SIGNALING DEVICE FOR RACING COASTERS.

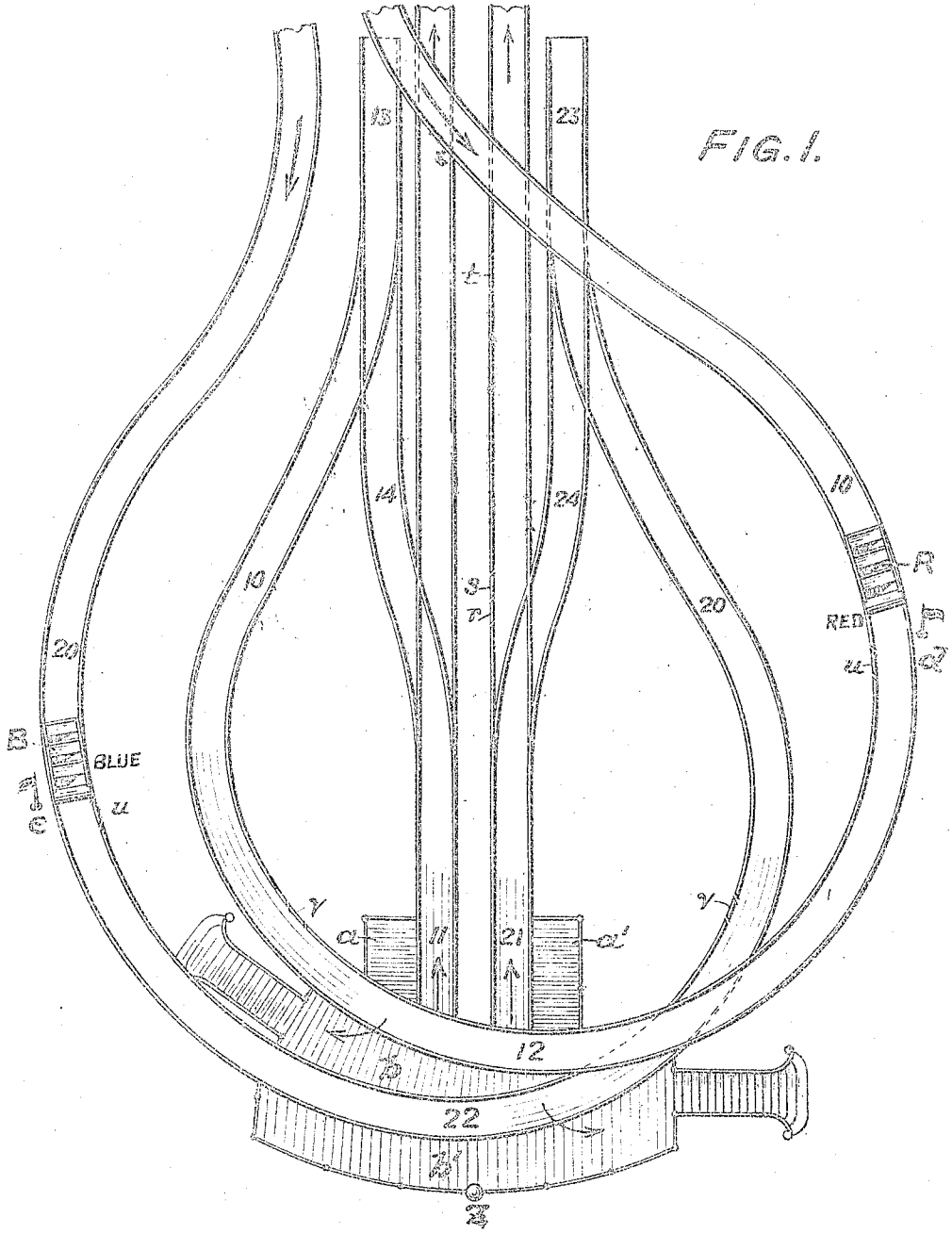
APPLICATION FILED NOV. 1, 1913.

1,102,821.

Patented July 7, 1914

3 SHEETS—SHEET 1.

FIG. 1.



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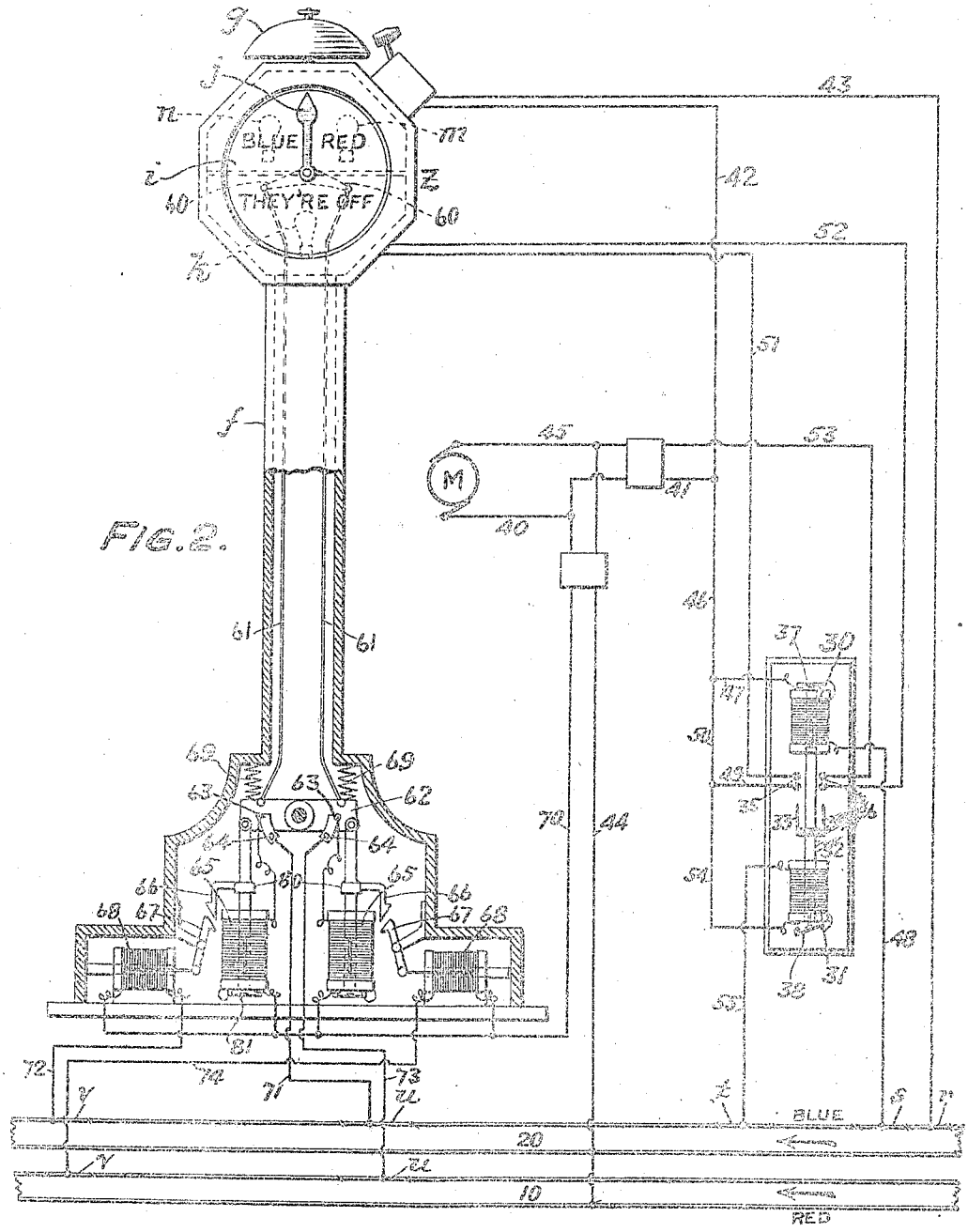

FIG. 2.

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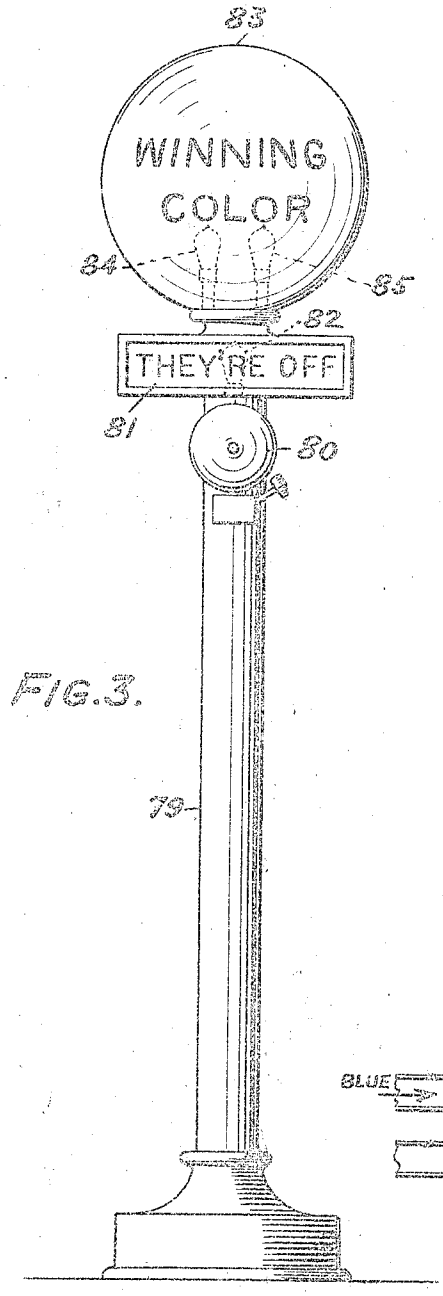

FIG. 3.

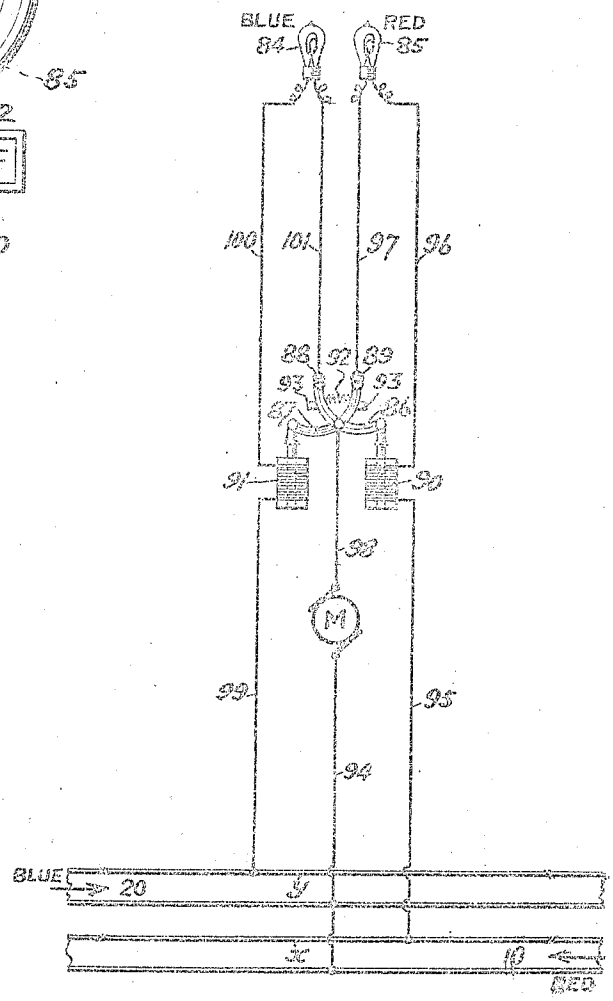

FIG. 4.

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SIGNALING DEVICE FOR RACING-COASTERS.

1,102,821. Specification of Letters Patent. **Patented July 7, 1914.**

Application filed November 1, 1913. Serial No. 798,660.

To all whom it may concern:

Be it known that I, LA MARCUS A. THOMPSON, a citizen of the United States, residing at New York city, county of New York, and State of New York, have invented a new and useful Improvement in Signaling Devices for Racing-Coasters, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to that type of pleasure railways known as racing coasters, in which two tracks, arranged in parallel relation throughout the greater part of their course, are erected on an elevated framework, said pair of tracks extending back and forth a plurality of times to form elongated loops at different levels, the starting point or loading station, as well as the finishing point or unloading station, being located more or less near one end of the structure adjacent to the highway or esplanade. In these railways the cars on the two tracks are simultaneously elevated from the starting point, which is near the level of the street, up a steeply inclined plane, to the highest point of the course, whence the cars travel by gravity throughout the course to the finishing point. In pleasure railways of this type the two tracks are of substantially the same length, and as nearly as possible the conditions on the two tracks are equalized, and the races are therefore invariably close and productive of much excitement. A pleasure railway of this type is the subject matter of a patent issued to me August 12, 1913, No. 1,070,082. One of the characteristic features of this patented railway is that both the unloading station and the loading station are brought close to the entrance to the pavilion, in full view from the highway, one being located above the other, whereby the features of maximum interest are forced upon the notice of people passing along the street.

My present invention is more especially intended for application to the racing coaster patented by me but it is also applicable to practically any construction of racing coaster. The object of the invention, generally speaking, is to add to the excitement and enjoyment of the riders and also to arouse and enhance the curiosity and interest of passers-by, with the idea of increasing the patronage of the railway, both by inducing riders to repeat their ride and by attracting many of the general public who would otherwise not be inclined to ride.

More specifically the object of my invention is to automatically announce, by appropriate signaling devices, the starting of the race and the winning car. Preferably the signals are so located that they may be observed by the riders, by those within the inclosure who are awaiting embarkation, and by the people passing along the highway, thereby arousing the interest and curiosity of the public and increasing the pleasure and excitement of the riders. As before stated, the "races" are invariably close, and where the loads on the two cars are approximately equal, the two cars finish at so nearly the same point that it is often difficult, and sometimes impossible, to determine with certainty the winning car. Another advantage, therefore, of the invention is to automatically determine the winning car, the arrangement being preferably such that the end of the racing course will be some distance before the unloading station is reached, in order that the riders may be apprised of the winner just before they actually reach the unloading point; the signal being preferably maintained in view until just before the cars reach, or just after they leave the unloading station.

In order that the invention may be fully understood, I have shown preferred embodiments of my invention in the accompanying drawings, in which—

Figure 1 is a plan view of the front portion of a pleasure railway showing the preferred location of the signals. Fig. 2 is a front (or rear) view of the signals and certain of the actuating mechanism therefor, some of the latter, as well as the tracks, being illustrated diagrammatically. Fig. 3 is a front (or rear) view of a modified signaling device, in which the signal announcing the winning car is operated wholly electrically. Fig. 4 is a view, mainly diagrammatic, showing the means for actuating the "winning car" signal of Fig. 3.

The pavilion fronts upon the highway, and within the pavilion, and extending back of the same to an indefinite distance, is the framework supporting the two tracks, which are denoted by the numerals 10 and 20. These tracks are each provided with two

termini connected by a switch track or connecting track.

11 and 21 indicate the starting termini of the two tracks and 13 and 23 indicate the end termini of the two tracks, a cash fare collecting station being located at the end termini.

14 and 24 are the connecting tracks above mentioned.

The loading station is located at the starting stretch 11, 21, of the course. This station comprises the platforms a and a'.

The unloading station, comprising the platforms b and b', is located comparatively near the end termini of the course, along the stretches 12, 22, preferably at the front of the pavilion adjacent to the highway, the loading station being preferably located also close to the highway and below the unloading station. As the tracks approach the unloading station from the rear, they diverge, one track 10, branching to the left (from the standpoint of travel of the car) and thence to the right and describing a loop (terminating at the end terminus 13) at about the center of which the stretch 12 is located; while the other track, 20, branches to the left and thence to the right, describing a loop (terminating at the end terminus 23) at about the center of which the stretch 22 is located. The two cars, after being loaded at the loading station a, a', are simultaneously elevated from the starting stretches 11 and 21, to the highest point of the course, whence the cars are simultaneously released and the "race" begins. The end of the racing course proper should be located some distance back of the unloading station b, b'. It is desirable, before reaching the loading station, to apply brakes either automatically or by an operator riding on the car, so as to bring the car to a gradual stop. It is therefore desirable to end the "race" at or before the point is reached where gravity and momentum cease to control the speed of the car. In Fig. 1 I have designated the "finishing point" on track 10 as d and the "finishing point" on the track 20 as e; these points being located in the loops merging into the end termini 13 and 23 and back of the unloading station, although it will be understood that they may be differently located provided they are equi-distant from the starting point of the course.

While I have shown and described a racing coaster constructed in accordance with my said patent, I do this merely in order that the application of the invention to a racing coaster may be clearly understood, as it will be clear, from the description hereinafter set forth, that the invention is also capable of embodiment in racing coasters not constructed in accordance with said patent.

In carrying out my invention, I prefer to have one set of cars run always on one track and another set always on another track and to distinguish the two sets of cars by giving them different predominating colors. For example, the predominating color on one car may be red, while the predominating color on the other car may be blue. In Fig. 1 I have shown a "red" car, marked R, on track 10, and a "blue" car, marked B, on track 20, car B being shown as having just reached the "finishing point," while car R is shown as not having quite arrived thereat, the "blue" car being therefore the "winner" of the "race." The employment of some such simple means to readily distinguish the two competing cars is very desirable, as it facilitates the interpretation of the signals, as will be understood as the description proceeds. It is also desirable that, as indicated, a car starting from one starting terminus, 11 or 21, should ultimately return to the same terminus, so as to keep the entire set of "red" cars always on one track and the entire set of "blue" cars always on the other track. But the constructor may so arrange the course as to cause a car leaving terminus 11 to arrive, ready for the next trip, at terminus 21, while a car leaving terminus 21 will arrive ready for the next trip, at terminus 11, this being explained in my said patent.

At the front of the pavilion I locate a combination signal z, shown diagramatically in Fig. 1. In Fig. 2 this signal is mounted on a post f and comprises a bell or gong g, and beneath it a casing h having a transparent dial i and a pointer j pivoted centrally of the dial. The casing is divided by a central partition into an upper and lower chamber, the upper chamber containing an electric lamp m, of, say, red glass and another electric lamp n of, say, blue glass. On the lower half of the dial is printed the words "They're off" or some differently worded announcement of the same import, and within the lower chamber is a lamp k. The signal z contains a dial, pointer and announcement, as described, on both its front and rear sides, so that the same information may be simultaneously imparted to those within the track inclosure and the passers-by on the esplanade in front of the track inclosure.

The signals are operated in the following manner. At a convenient point in the travel of the cars, preferably a few feet beyond the starting point, the bell or gong g is sounded, and either at the same time, or preferably immediately thereafter, the lamp k is lighted. Thus the gong attracts attention to the signal, and as soon as the eye is directed thereto, the announcement "They're off" is illuminated, whereby practically every one in the vicinity is apprised that a race is started, the current to the lamp being opened as soon as the cars are fairly

under way. At the conclusion of the race, dependent upon which car arrives first at the finishing point, the pointer *j* swings to one side or the other indicating that the race is won by a car of the color corresponding to the color with which the pointer registers. The pointer remains in this position as long as may be desired, say until after the cars are unloaded and pass a short distance beyond the loading station.

The electrical and mechanical instrumentalities by which the composite signal *z* is operated will now be described. M is a generator or other source of current supply. 30 and 31 are a pair of solenoids or electromagnets having a common core 32 carrying a pair of switch blades 33, 34, adapted to close respectively two pairs of contacts 35 and 36. One rail of one of the tracks, say the track 20, is broken or insulated at several points to form the separate "active" sections *r*, *s* and *t*. The section *r* is located a few feet in advance of the starting point. When the car running on track 20 reaches the section *r*, current passes from the generator M as follows: through wires 40, 41 and 42 to the bell or gong *g*, thence through wire 43 to section *r* of track 20, through the car to the other rail of track 20, and through wires 44 and 45 back to the generator. Thus the gong *g* is operated. When the car passes from section *r* to section *s*, the following circuit is established: from generator, through wires 40, 41, 46 and 47, to the solenoid 30, thence through wire 48 to section *s*, thence through the car to the other rail of track 20, and thence through sections 44 and 45 to the generator. The solenoid 30, being thus energized, the core 32 is operated to cause the switch blade 33 to connect the two contacts 35 and the switch blade 34 to connect the two contacts 36. The following circuit is thereby established: from generator M through wires 40, 41, 46, 50 and 49, switch 33 and wire 51 to the lamp *k*, and thence, through wire 52, switch 34, and wires 53 and 45 to the generator, thereby illuminating the lower half of the dial. The lower half of the dial may remain illuminated for as long a time as is desired. At the point in the course where it is desired to break the circuit to the lamp *k*, the section *t* is formed. When the car on track 20 reaches this section, the following circuit is established: from the generator, through wires 40, 41, 46, 50 and 54 to the solenoid 31, thence through wire 55 to section *t*, thence through the car, the other rail of track 20, and wires 44 and 45, to the generator. The energizing of solenoid 31 draws down the core of solenoid 30, opening the switches 33 and 34, and breaking the circuit to lamp *k*.

The solenoids 30, 31 are provided with keepers or circuit breakers 37, 38, which are adapted to be engaged by axial extensions of the solenoid core and moved to break the circuit through the solenoid. Thus, when the starting signals are inoperative, the solenoid core is in position to break the circuit through solenoid 31. After the solenoid 30 is energized to close the switches 33 and 34, the circuit is broken through solenoid 30. After the solenoid 31 is energized to open the switches 33 and 34, the circuit is again broken through solenoid 31, and remains broken after the car on track 20 passes beyond section *t*.

At the finishing point of each track 10 and 20, where, upon arrival of the car, it is desired to operate the pointer *j*, is provided a section *u*; at the point on each track beyond the finishing point, where, upon arrival of the car, it is desired to return the pointer *j* to its central position, is provided a section *v*: these sections being similar to sections *r*, *s* and *t*. To the pivoted end of the pointer *j* are attached arms 60, 60, connected respectively by rods 61, 61, with a centrally pivoted lever 62, normally held in a horizontal position by springs 69, 69. The lever 62 carries contacts 63, 63, normally contacting with two contact plates 64, 64, on opposite sides of the lever's center. The opposite ends of the lever 62 are connected to the cores of two solenoids 65, 65, each of which carries a catch 66 adapted, when the solenoid is energized, to be drawn down with the core and to be engaged by a latch 67 pivoted in the interior of the post and connected with the core of a solenoid 68.

Assuming that the blue car of a pair of racing cars first reaches the finishing point and rides upon the section *u* of track 20, the following circuit is closed: from the generator through the wires 40 and 70 to the left hand solenoid 65, thence to left hand contacts 63 and 64, thence through wire 71 to section *u* of track 20, thence through the car and the other rail of track 20, and thence through wires 44 and 45 to the generator. The energizing of the solenoid causes its core to pull down the left hand side of lever 62 and the left hand rod 61, thus swinging the pointer *j* to the left and pointing it to the blue light and thereby indicating the color of the winning car. The downward movement of the core is limited by a stop 80 thereon; but just before it reaches its lower limit of movement the corresponding catch 66 engages the latch 67 of the left hand solenoid 68, thus holding down the core of solenoid 65 and maintaining the pointer *j* in indicating position after the axial extension of the core of solenoid 65 has actuated the circuit breaker 81 and opened the circuit through solenoid 65. When the blue car reaches the section *v* the following circuit is established: from the generator through wire 70 to left hand solenoid 68, thence

through wire 72 to section v, thence through the car and the other rail of track 20, and thence through wires 44 and 45 to the generator. The energizing of solenoid 68 causes its core to move the latch 67 to unlatch the catch 66, thereby causing the springs 69 to center the lever 62 and thus restore the pointer j to its neutral position. Immediately afterward the car travels beyond section v, the core of solenoid 68 returns to its former position, and all the mechanical and electrical devices inclosed within the post f are then in the neutral position shown in Fig. 2. If the red car R first reaches the finishing point, the operation is the same, except that the circuit is closed through the right hand solenoid 65 wire 73 and track 10, thereby causing the pointer j to swing toward the right and point to the blue lamp. The release of the core of the right hand solenoid 65 is effected through the right hand solenoid 68, the circuit being closed through wire 74 and track 10, whereupon the pointer j is restored to normal position.

In Figs. 3 and 4 I have shown a simplified signaling apparatus, comprising a post 79 on which is mounted a gong 80, a transparent starting-announcing sign 81 containing a lamp 82 and a transparent globe 83 containing a blue-glass lamp 84 and a red-glass lamp 85. On the globe 83 is printed "Winning color" or words similar thereto. The circuit is opened and closed through the gong 80 and the lamp 82 by the means shown in Fig. 2 for controlling the circuits to the gong g and the lamp k. The circuits to the lamps 84 and 85 are controlled as follows: One rail of the track 10 is broken or insulated at two points to form a section x. A similar section y is formed in the track 20. A pair of levers 86, 87, are pivoted at a common point and contact at one end with fixed contacts 88 and 89 respectively, and at the other end are connected respectively to the cores of solenoids 90 and 91. 92 is a spring normally holding both levers 86 and 87 against stops 93, 93. If a red car R first reaches section x (the beginning of which is located at the "finishing point"), a circuit is closed through generator M, wire 94, car R, wire 95, solenoid 90, wire 96, red lamp 85, wire 97, contact 89, the upper half of lever 87 and wire 98 to the generator. This illuminates the interior of the globe with a red light. No current can pass through the solenoid 91 when the blue car B reaches section y, because the energizing of solenoid 90 swings the lever 86 out of contact with the contact 88, thus opening the circuit that would otherwise be closed by the car B. The circuit remains closed through the lamp 85 until the car R passes beyond the section x. If a blue car B first reaches the finishing point, a circuit is closed through the generator, wire 94, car B, wire 99, solenoid 91, wire 100, blue lamp 84, wire 101, contact 88 the upper half of lever 86 and wire 98 to the generator. This illuminates the interior of the globe with a blue light. No current can pass through the solenoid 90 when car R reaches section x, the energizing of solenoid 91 having swung the lever 87 out of contact with the contact 89. The circuit remains closed through the lamp 84 until the car B passes beyond the section y. When no cars are on the course along which sections x and y are located, no current can pass through either lamp 84 or 85, the globe 83 is unilluminated, and the spring 92 holds both levers 86 and 87 against the stops 93, 93 and in position to enable either the circuit through lamp 84 or the circuit through lamp 85 to be closed dependent upon which circuit is closed by the first car to reach the finishing stretch.

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

1. In a racing coaster, the combination with a pair of tracks providing a course on which cars are adapted to race, of a starting signal, a signal adapted to announce the winning car, means controlled by cars passing one point in the course to actuate the starting signal, and means controlled by either car, upon its arrival ahead of a competing car at another point in the course, to actuate the announcing signal to announce its arrival, the last named means including means adapted to render the other car inoperative to effect the actuation of the announcing signal.

2. In a racing coaster, the combination with a pair of tracks providing a course on which cars are adapted to race, of signaling means for announcing the winning car, electric circuits controlling the signaling means and respectively adapted to cause the signaling means to announce the respective cars, means controlled by the cars on the two tracks to govern the passage of current through the respective circuits, and means controlled by each circuit to render the other circuit inoperative to control the signaling means.

3. In a racing coaster, the combination with a pair of tracks providing a course on which cars are adapted to race, of signaling means to announce the winning car, means controlled by either car, upon its arrival ahead of a competing car at a given point in the course, adapted to actuate the signaling means to announce its arrival and to render the other car inoperative to effect the announcement of its own arrival at said point.

4. In a racing coaster, the combination with a pair of tracks providing a course on which cars are adapted to race, of a starting signal, signaling means to announce the

winning car, means controlled by cars passing along one stretch in the course to actuate the starting signal, and means controlled by a car on either track, upon its arrival ahead of a competing car at a given point in the course, adapted to actuate the last named signaling means to announce its arrival and to render the other car inoperative to effect the announcement of its own arrival at said point.

5. In a racing coaster, the combination with a pair of tracks providing a course on which cars are adapted to race, of an audible starting signal, a visible starting signal, signaling means to announce the winning car, means controlled by cars passing along one stretch in the course to actuate the starting signals, and means controlled by a car on either track, upon its arrival ahead of a competing car at a given point in the course, adapted to actuate the last named signaling means to announce its arrival and to render the other car inoperative to effect the announcement of its own arrival at said point.

6. In a racing coaster, the combination with a pair of tracks providing a course on which cars are adapted to race, of a signaling contrivance having two alternative but not simultaneous modes of operation, and means, including electrical connections to corresponding stretches of the respective tracks, adapted to be actuated by the respective cars to impart to the signaling means its respective modes of operation, whereby the car first arriving at the stretch of track on which it travels will control the operation of the signaling contrivance.

7. In a racing coaster, the combination with a pair of tracks providing a course on which cars are adapted to race, a starting signal, a signal to announce the winning car, means controlled by a car passing along a limited stretch of one track to render the starting signal operative during the occupancy of such stretch of track by such car, and means controlled by a car arriving ahead of its competing car at a given stretch of the course non-contiguous with the first named stretch, to actuate the announcing signal to announce its arrival.

In testimony of which invention, I have hereunto set my hand, at Philadelphia, on this 30th day of October, 1913.

LA MARCUS A. THOMPSON.

Witnesses:
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E. E. WALL.