F. SABOT AND A. SCHALK.

AMUSEMENT APPARATUS.

APPLICATION FILED JAN. 27, 1921.

1,412,711.

Patented Apr. 11, 1922.

2 SHEETS—SHEET 1.

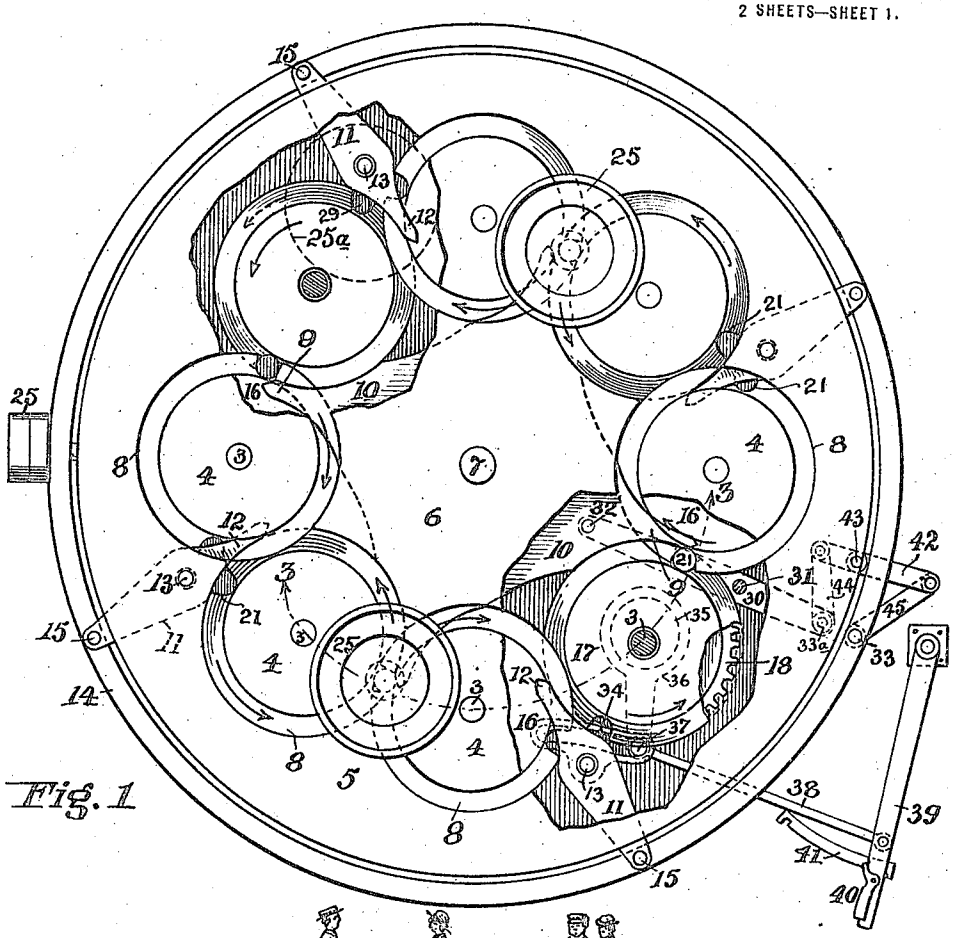

Fig. 1

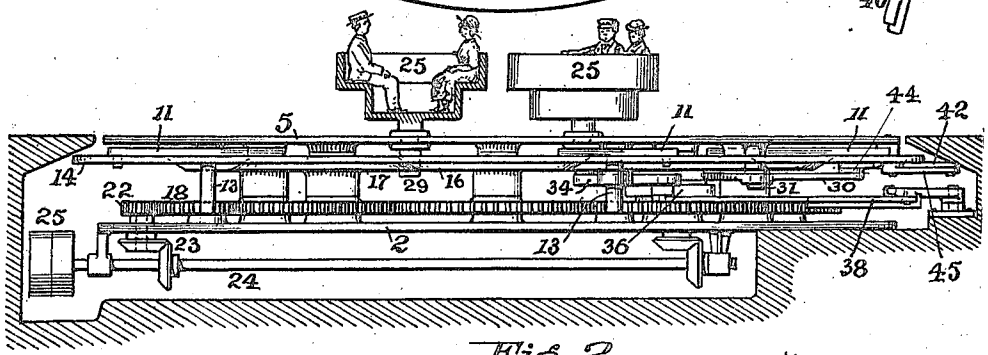

Fig. 2

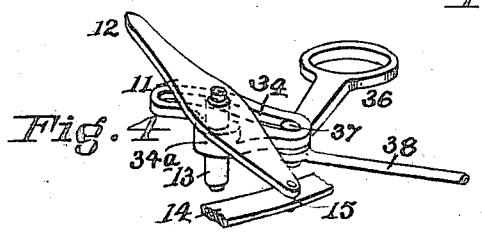

Fig. 4

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2 SHEETS—SHEET 2.

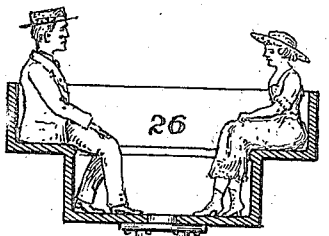
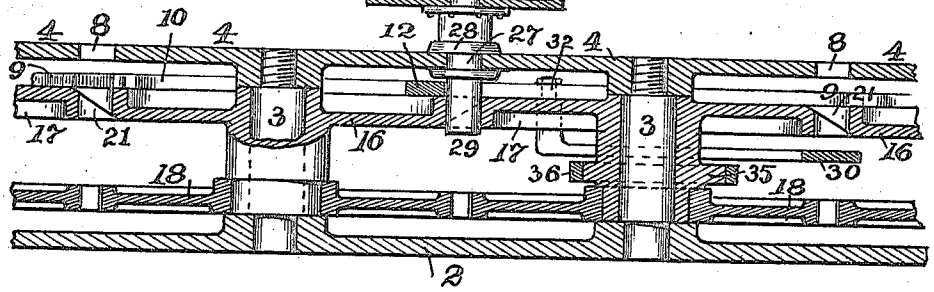


Fig. 3



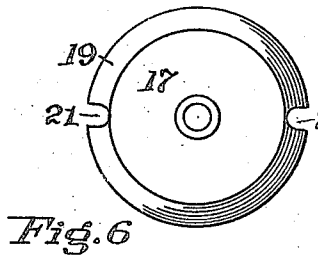


Fig. 6

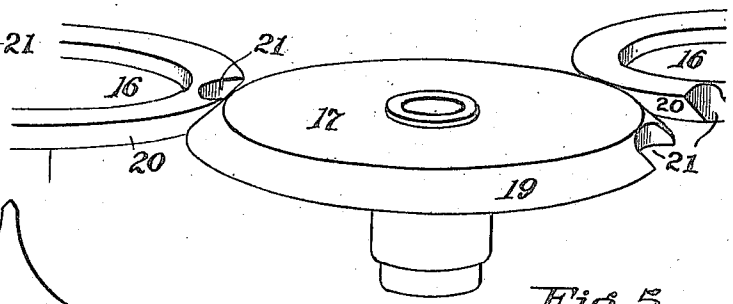


Fig. 5

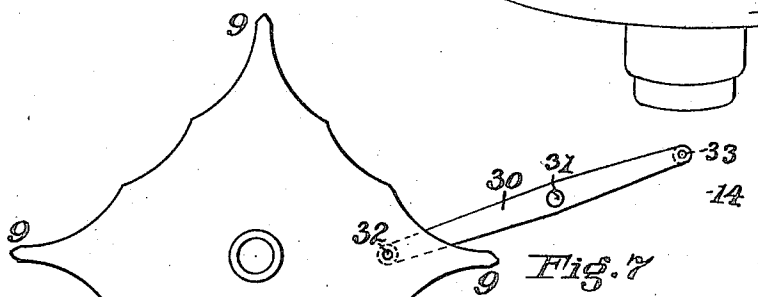


Fig. 7

Fig. 9

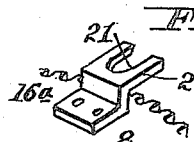
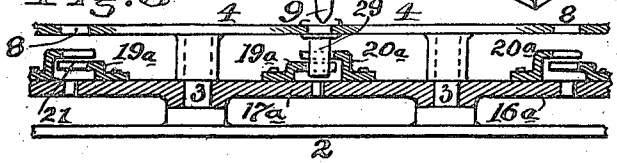


Fig. 8



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UNITED STATES PATENT OFFICE.

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AMUSEMENT APPARATUS.

1,412,711. Specification of Letters Patent. Patented Apr. 11, 1922.

Application filed January 27, 1921. Serial No. 440,297.

To all whom it may concern:

Be it known that we, FRANCIS SABOT and ALBERT SCHALK, citizens of the United States, and both residents of Philadelphia, county of Philadelphia, State of Pennsylvania, have invented an Improvement in Amusement Apparatus, of which the following is a specification.

The object of our invention is to provide an apparatus for amusement which shall combine the elements of a railway with rotary motion having resemblance to the principles of a merry-go-round, so that there is a sensation of travelling in a circular course with minor irregular movements and preferably with a reversible direction of travel at intervals.

Our invention consists of an apparatus having a pair of sinuous guide slots crossing each other at intervals and forming generally circular courses combined with vehicles guided along the said sinuous slots acting as guideways and said vehicles propelled along the said slots by means of notched wheels arranged in a circle and adapted to transfer the vehicle from wheel to wheel to cause it to travel about a central point, and said guide slots provided with guiding tongues or switches which cooperate with the slots and wheels to insure the proper direction of travel of the vehicles, whereby the vehicles may travel about the central point, but at the same time move in a sinuous course. Furthermore, our improvements comprehend the employment of means for shifting the position of the tongues or switches automatically for putting the two sets of sinuous slots alternately in operation for guiding the vehicles and causing thereby a change of direction of travel.

The invention also consists in manually operated means for shifting the time of action of the tongues or switches for the purpose of reversing the direction of travel of the vehicles along the sinuous slots.

Our invention also consists of improvements hereinafter described whereby the above objects and results are attained, said improvements comprising certain organization and combination of parts which are fully described hereinafter and more particularly defined in the claims.

Referring to the drawings: Fig. 1 is a plan view of an amusement apparatus embodying our improvements, and having portions of the upper floor broken away for showing interior parts; Fig. 2 is a side elevation of the improved apparatus showing the foundation in sections; Fig. 3 is a sectional side view taken on the dotted line 3—3 of Fig. 1, but with the vehicle shifted somewhat more to the right; Fig. 4 is a perspective view illustrating the mechanism for causing the shifting of the tongues for inducing a reversal in the direction of travel of the vehicle; Fig. 5 is a perspective view illustrating a series of propelling wheels; Fig. 6 is a plan view of one of the propelling wheels; Fig. 7 is a rotary reciprocatory plate having the inner tongues; and Figs. 8 and 9 respectively show a section and perspective view of a modification.

2 is the base frame of the machine and may rest upon a suitable concrete foundation. Secured to the base frame and extending upwardly are a plurality of studs 3 forming bearings and spaced equidistant apart in a circular arrangement, and also an upwardly extending stud 7 arranged at the central point within the circular arrangement of studs 3. Journalled upon the studs 3 are a plurality of wheels 16 and 17, each provided with notches 21 in their peripheral portions and diametrically arranged, as will be more particularly understood by reference to Figs. 5 and 6. These wheels 16 and 17 have their hub portions provided with gears 18 for gearing the respective wheels 16 and 17 into one continuous circular train, so that they alternately rotate in opposite directions; that is to say, all of the wheels 16 rotate in the opposite direction to the rotation of the wheels 17. Furthermore, in the preferred construction, the wheels 16 and 17 have their perimeters beveled as respectively indicated at 20 and 19, the said bevel portions overlapping each other though not intended for purposes of causing the wheels to be propelled, but are intended to enable the notched portions 21 of adjacent wheels 16 and 17 being brought into alinement, so that the vertical pin 29 of the vehicle 26 (Fig. 3) will at certain spaces in its travel be engaged by the notches 21 of both the wheels 16 and 17, that is to say, at the time of transfer from the custody of the wheel 16 into the custody of wheel 17 and vice versa. It is manifest that this overlapping of the wheels 16 and 17 might be made in any other suitable manner, such as giving to each of them the maximum diameter and arranging them

slightly one above the other so that they overlap and would in each case be adapted to act upon the downwardly extending pin 29. The bevel itself is a mere incident to permit the overlapping of the wheels 16 and 17 while permitting them to remain in the same plane.

The train of gears 18 may be driven by means of a gear 22 (Fig. 2) which is driven by bevel gears 23 and shaft 24 having fast and loose pulleys 25.

Secured to the top of each one of the studs 3 is a circular cover plate 4 having a diameter which is less than the maximum diameter of the wheels 16 and 17, so that the notched or bevel portions 19 and 20 of said wheels will project beyond these circular table portions 4. Arranged centrally of said circular table portions is a central table portion 6, the same being rigidly supported upon the stud 7 and the perimeter of this central table portion 6 is scalloped so as to cooperate with the circular table portions 4, as clearly indicated in Fig. 6, and provide between it and the circular table portions curved or semi-circular slots or channels. Similarly there is arranged outside of the series of circular table portions 4 an annular table portion 5 which is also scalloped, but the scallops are on the inner edge and in cooperating with the circular table portions 4 provide curved or semi-circular slots or channels. This table portion 5 may be supported in position relatively to the base 2 in any suitable manner, so long as it is stationary. All of the parts 4, 5 and 6 are stationary and the relative arrangements thereof provide a plurality of circular slots 8 which intersect and because they intersect, the alternate inner and outer semi-circular portions may be considered as composing a sinuous slot and in this manner provide two sinuous slots crossing at intervals, as indicated at 8, in Fig. 1.

26 are vehicles provided with circular seats and having at their lower parts a downwardly extending pin 29 and two flanges 28 forming between them an annular groove 27 which extends through the sinuous slotted portions 8 in the table, the pin 29 extending downwardly into the notches 21 of the wheels 16 and 17, all of which will be understood by reference to Fig. 3. By reason of this construction, it is manifest that the downwardly extending pin portion of the vehicle may be moved along the slots 8 and will be positively moved therein in a sinuous course under the action of the notched wheels 16 and 17; but to insure the said pins travelling a sinuous course instead of a circular course in the custody of the said wheel 16 or 17, we provide suitable tongues 9 and 12 which act as switches to insure a positive traverse of the pin from the notches of wheel 16 to the notches of a wheel 17, and from said wheel to the next wheel 16 and so on. The tongues or switches 9 are arranged between every alternate pair of wheels 16 and 17 and are integral with a plate 10 pivoted upon the central stud 7, so that it may oscillate thereon to throw the tongues 9 toward the wheels 16 or toward the wheels 17, as may be required. From this it will be seen that where there are eight wheels, there are four of these tongues 9. The plate 10 is oscillated by means of a pivoted lever 30 pivoted at 31 to the underside of the stationary floor 5 and having one end hinged to the plate 10 at 32 and the other end hinged at 33[a] to a link 44 which is also connected to one end of a lever 42 having a fulcrum at 43 and having its other end connected with the circular ring 14 at 33 by a link 45. A shifting of the ring 14 will cause the plate 10 to be oscillated. In addition to the tongues 9, there are four tongues 12 and these are arranged between the wheels 16 and 17, but spaced with respect to them so as to be located alternately to the tongues 9, as will be clearly understood by reference to Fig. 1. The tongues 12 are extensions of levers 11 which are pivoted by means of the upright shafts 13 and the outer ends of these levers are hinged at 15 to the aforesaid ring 14. It will now be manifest that if the ring is shifted, the tongues 12 will be shifted in the same direction and will be simultaneously moved, and similarly the tongues 9 will be simultaneously shifted, but in such shifting the tongues 9 and 12 will be simultaneously shifted in opposite directions, for reasons which will presently appear.

By this shifting of the tongues, it is manifest that the two vehicles 25 will follow one of the sinuous slots in the same direction indicated by the arrows when the wheels 16 and 17 are rotated. They will traverse the same sinuous slot 8 and travel around the center 7 with a clockwise general movement. If, however, one of these vehicles 25 be repositioned, as indicated in dotted lines 25[a], then the travel of such vehicle will be in the opposite sinuous slot and will be propelled therein in the general direction around the center 7 contra-clockwise. In this manner, two or more vehicles may be simultaneously caused to travel in opposite general circular directions about the center 7, and as the diameter of the vehicles is less than the diameter of the wheels 16 and 17, such vehicles may pass each other without contact. As many of the vehicles, as desired, may be employed, provided the maximum number does not exceed the number of propelling wheels 16 and 17.

In all cases, the direction of the travel of the vehicles is such that they move in the slots toward the points of the switch tongues 9 and 12, and by reason of the position of said tongues, the pins 29 of the vehicles are properly directed into the suc-

cessive portions of the sinuous slotted passages. These tongues are, moreover, caused to be shifted at every half revolution of the wheels 16 and 17, so as to insure the proper directing of the pins 29 of the respective vehicles. For example, referring to the lowermost vehicle 25 of Fig. 1, the rotation of the wheel 17 and tongue 9 immediately below the vehicle will cause the vehicle to travel along the slot adjacent to the center 7, and before the pin 29 reaches the juncture with the next wheel 16, the tongue 12 will have shifted so that the pin 29 will be guided in the outer segment of the sinuous slot and so on throughout the course. On the other hand, if a vehicle such as indicated in dotted lines were simultaneously in operation, its pin 29 would be carried along the outer segment of the other sinuous slot for a half revolution of the propelling wheel 17, and by the shifting of the tongue 9, its travel will be continued on the inner segment of the said slot, provided above the next adjacent wheel 16.

Referring now to the means for shifting the tongues 9 and 12 alternately at every half revolution of the wheels 16 and 17, we provide the following devices. Secured to one of the driven wheels 17 or in any manner rotated therewith, an eccentric 35 which operates an eccentric arm 36 having at its outer end a vertical pin 37 engaging a slot 34 in a casting 34^a, said casting secured to one of the vertical shafts 13 for operating one of the switch tongues 12. The position of this pin 37 in the slot 34 is insured by a link 38 and a control lever 39 having a detent or locking device 40, engaging the notched segment 41. In the position shown in Fig. 1, it will be seen that when the eccentric makes a half revolution, the tongue 12 will be shifted from its present position over the wheel 16 to a position to the right over wheel 17. This reciprocating of the tongue 12 will take place with the continued rotation of the eccentric to the wheels. As before pointed out, the connection of the tongues 12 and 9 with the outer ring 14 will not only cause the said ring to be given a rotary reciprocating motion, but the connection of the plurality of levers 11 having the tongues 12 being connected to the said ring will simultaneously be shifted, and likewise, all of the tongues 9 being formed on the same plate 10, will, through the connecting device with said plate and ring 14, be simultaneously shifted, but in a contrary direction to the tongues 12, as before explained.

As it is desirable to heighten the pleasure of the occupants of the vehicles, we provide means for reversing the direction of travel of the said vehicles and also to make them swing about each other at time of such reversals. To accomplish this, we so shape the slot 34 that when the pin 37 of the eccentric rod is shifted to the other end of the slot, all of the tongues will be simultaneously shifted to a position which would be equivalent to those which they would occupy with a half revolution of the wheels 16 and 17, but without shifting the position of the vehicles. The slot 34 extends to opposite sides of the shaft 13, so that the connection of the connecting rod and its pin with the casting 34^a having the said slot provides a lever action upon the vertical shaft 13 to rock it and this is so, whether the pin is shifted to one or the other end of the slot. The result of this shifting of the tongues will then cause the vehicles to be transferred from one of the sinuous slots to the other, that is to say, the vehicles 25 which formerly traversed clockwise will now traverse contra-clockwise and vice versa. This shifting of the pin 37 may be accomplished by the adjusting of the lever 39 over the segment 41. While we have shown one form of means for changing the relative diameters of shifting the tongues in the particular direction, we do not wish to confine ourselves to any particular mechanism for accomplishing this purpose, as many equivalent devices may be devised for securing these results. It is, however, important that there shall be connecting means for shifting the tongues which shall cooperate in timed relation with the rotation of the wheels 16 and 17.

It will now be apparent that we have devised a novel and useful construction which embodies the features of advantage enumerated as desirable, and while we have in the present instance shown and described the preferred embodiment thereof which has been found in practice to give satisfactory and reliable results, it is to be understood that we do not restrict ourselves to the details, as the same are susceptible of modification in various particulars without departing from the spirit or scope of the invention.

Having now described our invention, what we claim as new and desire to secure by Letters Patent, is:—

1. In an amusement apparatus, a floor having two crossing endless slotted tracks of sinuous form which together provide a circular course with lateral sinuosities therein, a vehicle supported above the floor and having a downward projection extending through the slots and guided thereby, power devices arranged below the floor and coacting with the downward projection from the vehicle whereby the latter is propelled along the sinuous slot, guiding tongues or switches arranged at the crossing points of the two sets of endless sinuous slots for directing the movement of the vehicles from one slot into the other or vice versa to change the direc-

tion of travel of the vehicle, and automatic means independent of the vehicles for intermittently shifting the tongues at intervals of time and before the vehicles reach the slot crossing points.

2. In an amusement apparatus, an endless slotted track forming a circular course with lateral sinuosities therein arranged in a floor, a vehicle supported above the floor and having a downward projection extending through the slot and guided thereby, power devices arranged below the floor and coacting with the downward projection from the vehicle whereby the latter is propelled along the sinuous slot, a second endless sinuous slot crossing the first mentioned endless sinuous slot at intervals, guiding tongues or switches arranged at the crossing points of the two sets of endless sinuous slots for directing the projection from the vehicle from one slot into the other or vice versa to change the direction of travel of the vehicle, and automatic means for intermittently shifting the tongues at intervals of time and in which the means for shifting the tongues with manually controlled devices for changing the time of shifting the tongues relatively to the travel of the vehicle.

3. In an amusement apparatus, an endless slotted track forming a circular course with lateral sinuosities therein arranged in a floor, a vehicle supported above the floor and having a downward projection extending through the slot and guided thereby, power devices arranged below the floor and coacting with the downward projection from the vehicle whereby the latter is propelled along the sinuous slot, a second endless sinuous slot crossing the first mentioned endless sinuous slot at intervals, guiding tongues or switches arranged at the crossing points of the two sets of endless sinuous slots for directing the projection from the vehicle from one slot into the other or vice versa to change the direction of travel of the vehicle, and automatic means for intermittently shifting the tongues at intervals of time and in which the means for shifting the tongues comprise an eccentric, a rod operated thereby, and means between the rod and the tongues for giving to them an oscillatory motion.

4. The invention according to claim 2, wherein the means for shifting the tongues comprise an eccentric, an eccentric rod therefor, means between the eccentric rod and the tongues comprising a transverse guide pivoted intermediate of its ends, and manually controlled devices arranged for shifting the eccentric rod into mechanical connection with either end of the transverse guide, whereby the point of action of the rod may be shifted from one side of the axial point of the transverse guide to the other side thereof, and vice versa.

5. In an amusement apparatus, an endless slotted track forming a circular course with lateral sinuosities therein arranged in a floor, a vehicle supported above the floor and having a downward projection extending through the slot and guided thereby, power devices arranged below the floor and coacting with the downward projection from the vehicle whereby the latter is propelled along the sinuous slot, a second endless sinuous slot crossing the first mentioned endless sinuous slot at intervals, guiding tongues or switches arranged at the crossing points of the two sets of endless sinuous slots for directing the projection from the vehicle from one slot into the other or vice versa to change the direction of travel of the vehicle, combined with automatic means for intermittently shifting the tongues at intervals of time and comprising an eccentric, an eccentric rod therefor, a pivoted slotted frame in which the end of the eccentric rod has a sliding motion, said slotted frame movable with the pivoted tongues and the slot therefor having a cam shape relative to its axis, and manually controlled means for adjusting the position of the eccentric rod in the slot, whereby said adjustment will cause the tongue to be oscillated to change its relative position with respect to the sinuous slots.

6. In an amusement apparatus, an endless slotted track forming a circular course with the lateral sinuosities therein arranged in a floor, a vehicle supported above the floor and having a downward projection extending through the slot and guided thereby, power devices arranged below the floor and coacting with the downward projection from the vehicle whereby the latter is propelled along the sinuous slot, a second endless sinuous slot crossing the first mentioned endless slot at intervals, an additional vehicle also supported above the floor and having a downward projection extending through the last mentioned sinuous slot and guided thereby and propelled by the power devices, guiding tongues or switches arranged at the crossing points of the two sets of endless sinuous slots and alternately pointing radially in opposite directions for directing the projections from the vehicles along the respective sinuous slots, and automatic means independent of the vehicles for simultaneously oscillating the guiding tongues or switches in advance of the vehicles reaching the crossing points of the sinuous slots.

7. The invention according to claim 6, wherein the crossing sinuous slots provide a series of circular portions arranged in a circle and opening into each other, and in which the power devices below the sinuous slots comprise a plurality of overlapping wheels having notched beveled peripheries arranged immediately below the circular slotted portions of the sinuous slots and with the beveled portions rolling in relatively

close relation, and gearing between the plurality of notched beveled wheels for causing said wheels to rotate and with adjacent wheels rotating in opposite directions.

8. The invention according to claim 6, further having hand controlled means for changing the normal position of the tongues relatively to the slots and independent of the vehicles, whereby the guiding action upon the pins of the vehicles will cause said vehicles to be transferred from one sinuous slot to the other and reverse their direction of travel.

In testimony of which invention, we hereunto set our hands.

FRANCIS SABOT.
ALBERT SCHALK.