C. G. FEUCHT.

RAILWAY SWITCH.

APPLICATION FILED JULY 17, 1922.

1,432,104.

Patented Oct. 17, 1922.

2 SHEETS—SHEET 1.

Fig. 3.

Fig. 1

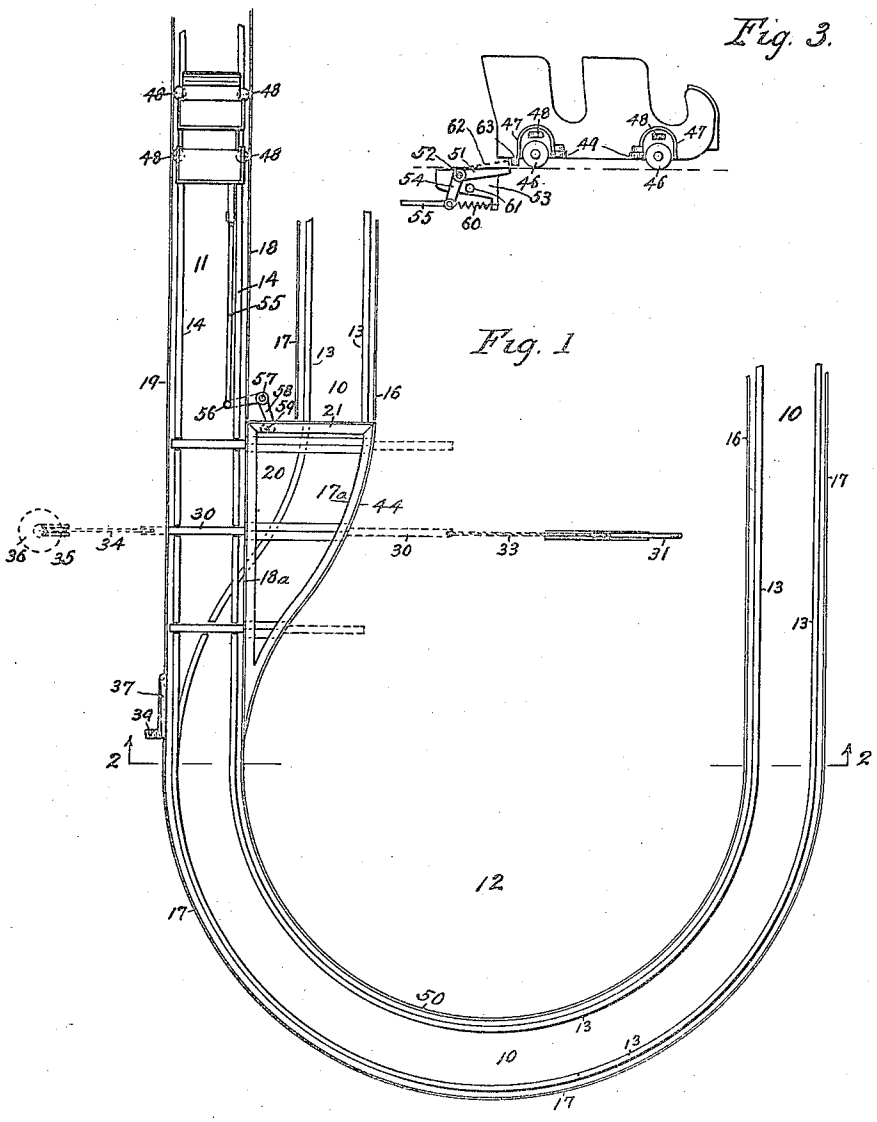
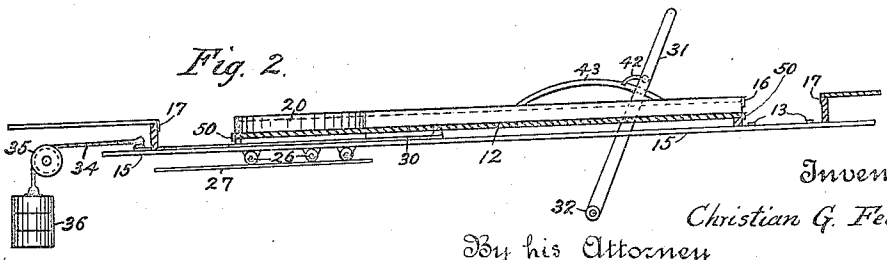


Fig. 2.



Inventor

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By his Attorney

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2 SHEETS—SHEET 2.

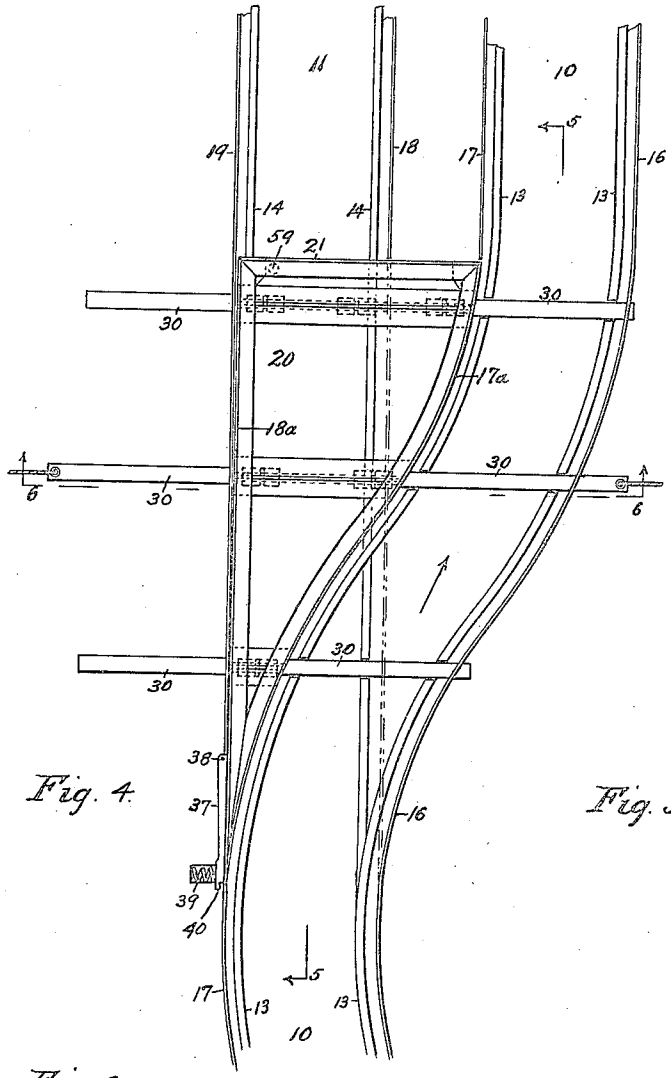


Fig. 4.

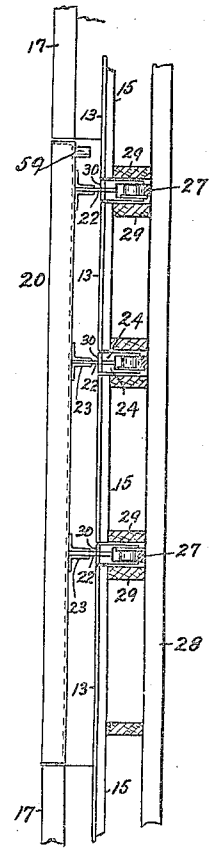
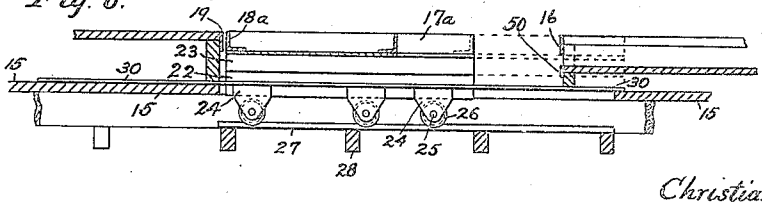


Fig. 5.

Fig. 6.



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UNITED STATES PATENT OFFICE.

CHRISTIAN G. FEUCHT, OF BROOKLYN, NEW YORK.

RAILWAY SWITCH.

Application filed July 17, 1922. Serial No. 575,520.

To all whom it may concern:

Be it known that I, CHRISTIAN G. FEUCHT, a citizen of the United States, and resident of Brooklyn, in the county of Kings, and State of New York, have invented certain new and useful Improvements in Railway Switches, of which the following is a specification.

The invention relates to railway switches for roller coasters of the general class consisting of an endless main track having sections comprising an operating station where the cars may be loaded and discharged, an upward incline along which the cars are elevated by power, and a series of dips, rises, loops, and grades over which the cars are adapted to run by gravity back to the operating station.

The general object of the present invention is to provide a siding or side track having switch connections to the main track and adapted to be used for the storage or repair of the cars.

A further object is to provide means controlled from the operating station for shifting said switch to alternately open and close the main and side tracks and permit a car or train to be quickly transferred from the main track to the side track or from the latter back to the main track, thus affording an opportunity for either introducing or withdrawing one or more trains for operation on the main line to meet the varying demand for cars.

For further comprehension of the invention, and of the objects and advantages thereof, reference is had to the following description and accompanying drawings, and to the appended claims in which the various features of the invention are more particularly pointed out.

Figure 1 of the drawings is a view showing portions of the main and side tracks in connection with the operating station and switch device as embodied in the present invention.

Figure 2 is a sectional elevation, taken along the broken line 2—2, Fig. 1.

Figure 3 is a side view of a car adapted for operation over the tracks, the broken line below the wheels indicating a downwardly inclined track line.

Figure 4 is a view on larger scale of a portion of the main and side tracks shown in connection with the switch.

Figure 5 is a sectional elevation along the broken line 5—5, Fig. 4.

Figure 6 is a sectional elevation along the broken line 6—6, Fig. 4.

In the drawings the main and side tracks are respectively indicated by the numerals 10 and 11, the former being in the general shape of a loop with the interior portion thereof forming an operating station 12. The two tracks are respectively provided with corresponding gravity rails 13 and 14 of regular flat sections and secured in the usual manner to the track structure 15, the rails being adapted to engage the gravity wheels 46 of the cars and to support the downward thrust or weight thereof. Secured to the track structure above the level of the gravity rails at opposite sides of the main track are the lateral thrust rails 16 and 17 adapted to be engaged by the side wheels 48 of the cars and serve therewith to laterally guide the cars around the course of the track. Correspondingly arranged lateral thrust rails 18 and 19 are provided for the side track 11. The adjacent lateral thrust rails 17 and 18 of the two tracks are provided with an opening or passageway adapted for the movement of the switch-frame 20, the latter comprising an angle-iron section 21 connected at opposite ends to the lateral thrust rails 17^a and 18^a, which when positioned at opposite extremes of their transverse movement are adapted to aline respectively with the lateral thrust rails 17 and 18 and with which they jointly form a guiding surface for the side wheels 48 of the cars, the lateral thrust rails of the switch being shaped to suit the desired paths of the two tracks.

For the support of the switch-frame 20, the bottom flanges of the angles thereof are connected to the upper ends of vertical plates 22 by means of angles 23, and the lower ends of the plates are provided with side brackets 24 arranged to carry the pins 25, on which are rotatively mounted the wheels 26, arranged to run on the switch carrier rails 27, supported in conventional manner as by the beams 28. To provide for the lateral movement of the switch, transverse slots are formed across the gravity rails 13 and 14 and in the supporting track structure thereof, the latter being carried on opposite sides of the slots by the beams 29, the several slots being closed by filler-plates

30, fixed to the side brackets 24 and movable with the switch. The filler-plates are of equal thickness to that of the gravity rails, the upper surfaces thereof being in line with each other to present a smooth surface over which the gravity wheels of the car may run without shock.

For transversely shifting the switch, a hand lever 31 is pivoted at a point below the operating station 12 by the pin 32 and is secured to one end of a connection 33, the opposite end of the connection being attached to an end of one of the filler plates 30, the opposite end being fixed to one end of a flexible connection 34, adapted to pass over a sheave wheel 35 and be connected to the weight 36, the latter normally acting to shift the switch into the position shown in Fig. 4, wherein the side track is closed and the main track is opened for the regular operation of the cars. In this position the lateral thrust rail 19 of the side track 11 serves as a stop for the thrust rail 18^a of the switch, and the lateral thrust rail 17^a of the switch is alined with the lateral thrust rail 17 of the main track. To provide for alinement of the lateral thrust rails at the switch point, a spring arm 37 is provided, one end thereof being pivoted at 38 while the opposite end is inwardly urged by the spring 39. At its yielding end the arm is off-set to form an overlapping portion 40 normally adapted by the spring action to stop against the adjacent fixed rail and effect an alinement therewith when the side track is opened, and when the main track is opened to be thrust backward therefrom by the movement of the switch point in effecting its own alinement, as clearly shown in Fig. 4.

By operating the hand lever 31 in opposition to the weight 36, as shown in the position indicated in Figs. 1 and 2, the switch position will be correspondingly shifted, the main track 10 closed, and the side track 11 opened. In this latter position cars or trains may be quickly transferred either from the side track to the main track or from the latter to the former to accommodate varying traffic conditions. Also in this latter position, the hand lever is preferably provided with a stop device consisting of a pawl 42, detachably engaging a tooth or notch in the segment 43 and adapted to hold the switch against the part of the operating station indicated at 44. Upon the detachment of the pawl, the hand lever 31 will be released and the switch automatically shifted by the weight 36 acting through the connection 34 and filler-plate 30 to normally maintain an open main track.

As shown in Figs. 1 and 3 the gravity wheels 46 are mounted on frames 47 fixed to the opposite sides of the car, and the side or guiding wheels 48 and 49 are likewise carried by the frames, the wheels 48 being arranged on opposite sides of the car and adapted to engage the opposite lateral thrust rails on both the main and side tracks, the rails serving as bearing surfaces to receive the lateral thrusts of the car and maintain the latter's position upon the tracks. The guiding wheels 49 are arranged on one side of the car only, at a relatively lower level, corresponding with that of the lateral thrust rail 50 with which the wheels engage. The rail 50 extends essentially around the curved portion of the low level operating station 12, from which point the initial and terminal movements of the cars are controlled.

Around the operating station, the gravity rails 13 are disposed on a regular down grade extending across the path of the switch over both the main and side tracks and from which latter point the gravity rails 14 of the side track are upwardly inclined, the two track sections forming opposite down grades towards each other. This down-grade section of the side track may be limited in length to that of a train of cars and beyond which point the track may be suitably graded to serve for storing or repairing the cars. For supporting a car or train upon the down-grade section of the side track, a stop-bar 51 is pivoted upon a pin 52, fixed in a bracket 53, carried in any approved manner upon the track structure. The stop-bar is provided with an integral leg 54, having a connecting rod 55 leading to an arm 56 of a bell-crank lever pivoted at 57, the opposite arm 58 of the lever being disposed for engagement by a pin or lug 59 fixed to the bar 21 of the switch frame. The arm 54 of the stop-bar is connected to one end of a spring 60, its opposite end being secured to a lug formed on the bracket 53. The spring acting under tension normally urges the leg 54 into engagement with the stop-pin 61, the latter being fixed to the bracket 53. As thus engaged with the stop-pin, the stop-bar 51 will be moved into its upper position indicated by the dotted line 62, and in which position the end of the bar will be engaged by the lug 63, fixed to the bottom of a car, and whereby the latter will be held against movement along the downwardly inclined track section. In the position of the several parts shown in full lines in Figs. 1 and 3, the side track has been opened by the switch, the lug 59 of the latter having engaged and thrown the arm 58 for the operation of the connecting rod 55, which in turn has caused the stop-bar 51 to be depressed and released from the lug 63 of the car, the latter being thus free to run by gravity over the downwardly inclined gravity tracks 14 to the main track. The opposite grades of the side and main tracks are proportioned rela-

tive to their respective lengths so that by simply operating the handle bar 31 a suitably positioned car or train on the down grade section of the side track may be quickly transferred by gravity to the main track, and also a similar transfer may be made from the main track to the side track.

While I have shown and described the preferred construction and arrangement of the several parts of the invention it is to be understood that various detail changes may be made therein to suit the variable situations without departing from the essential principles or scope of the invention.

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

1. A railway comprising a main track, a side track, oppositely disposed lateral thrust rails provided for each of said tracks, a transversely movable switch provided with oppositely disposed lateral thrust rails, and means for operating said switch in opposite directions to respectively open and close said tracks alternately.

2. A railway comprising main asd side tracks, opposite lateral thrust rails provided for each of said tracks, a switch movable in opposite directions transversely of said tracks, opposite lateral thrust rails provided for said switch, the said switch rails in their opposite movements being respectively adapted to aline with one of the rails of each of said main and side tracks and effect the opening of said tracks, and means for operating said switch.

3. A railway comprising main and side tracks, gravity rails provided for each of said tracks, opposite lateral thrust rails provided for each of said tracks, a switch movable in opposite directions transversely of said tracks, opposite lateral thrust rails provided for said switch, the said switch rails in their opposite movements being respectively adapted to aline with one of the lateral thrust rails of each of said main and side tracks and effect the opening of said tracks, and means for operating said switch.

4. A railway comprising main and side tracks, opposite lateral thrust rails provided for each of said tracks, a switch movable in opposite directions transversely of said tracks, opposite lateral thrust rails provided for said switch and having an end of each thereof joined together to form a switch point, the said switch rails in their opposite movements being respectively adapted at their switch point to aline with the opposite rails of said main track and at their opposite ends to aline respectively with one of the rails of each of said main and side tracks and effect the opening of said tracks, and means for operating said switch.

5. A railway comprising a main track curved at one end in the form of a loop, an operating station within said loop, a side track, opposite lateral thrust rails provided for each of said main and side tracks, a switch movable in opposite directions transversely of said tracks and provided with oppositely disposed lateral thrust rails, and means actuated from said operating station to shift said switch in opposite directions to respectively open and close said tracks alternately.

6. A railway comprising a main track curved at one end in the form of a loop, an operating station within said loop, a side track, opposite lateral thrust rails provided for each of said main and side tracks, the outer lateral thrust rail of said main track extending around said station being alined with the outer lateral rail of said side track, a spring urged arm disposed to normally maintain alinement between said outer lateral thrust rails of said main and side tracks when the latter track is open, a switch movable in opposite directions transversely of said tracks, opposite lateral thrust rails provided for said switch and having an end of each thereof joined together to form a switch point, and means for operating said switch against the action of said spring arm to effect the opening of said main track.

7. A railway comprising main and side tracks, gravity rails provided for each of said tracks, opposite lateral thrust rails provided for each of said tracks, a switch movable transversely of said tracks and provided with opposite lateral thrust rails, means disposed below the level of said gravity rails for movably supporting said switch, the said switch thrust rails in their opposite movements being respectively adapted to aline with one of the thrust rails of each of said main and side tracks and effect the opening of said tracks, and means for operating said switch.

8. A railway comprising main and side tracks, gravity rails provided for each of said tracks, opposite lateral thrust rails provided for each of said tracks, a switch movable transversely of said tracks and provided with opposite lateral thrust rails, passageways extending transversely of said gravity rails and below the level thereof, switch carrier rails alined with said passageways and disposed below the level of said gravity rails, supporting members fixed to the bottom of said switch and extending through said passageways and movable along said switch carrier rails, the said switch thrust rails in their opposite movements being respectively adapted to aline with one of the thrust rails of each of said main and side tracks and effect the opening of said tracks, and means for operating said switch.

9. A railway comprising main and side

tracks, gravity rails provided for each of said tracks, opposite lateral thrust rails provided for each of said tracks, a switch movable transversely of said tracks and provided with opposite lateral thrust rails, passageways extending transversely of said gravity rails and below the level thereof, switch carrier rails alined with said passageways and disposed below the level of said gravity rails, supporting members fixed to the bottom of said switch and extending through said passageways and provided with wheels arranged to engage said switch carrier rails, filler-plates fixed to said switch supporting members and slidably closing said passageways, the upper surfaces of said filler-plates and said gravity rails being alined with each other, the said switch thrust rails in their opposite movements being respectively adapted to aline with one of the thrust rails of each of said main and side tracks and effect the opening of said tracks, and means for operating said switch.

10. A railway comprising main and side tracks, gravity rails provided for each of said tracks, opposite lateral thrust rails provided for each of said tracks, a switch movable transversely of said tracks and provided with opposite lateral thrust rails, means disposed below the level of said gravity rails for movably supporting said switch, the said switch thrust rails in their opposite movements being respectively adapted to aline with one of the thrust rails of each of said main and side tracks and effect the opening of said tracks, means including a weight adapted to move said switch in one direction and means including a hand lever adapted to move said switch in the opposite direction against the action of the weight.

11. A railway comprising a main track curved at one end in the form of a loop, an operating station within said loop, a side track, opposite lateral thrust rails provided for each of said main and side tracks and constituting inner and outer rails with respect to said station, a switch movable transversely of said tracks and provided with opposite lateral thrust rails constituting inner and outer rails with respect to said station, said inner switch rail in its outward movement being arranged to aline with the outer rails of said main and side tracks to effect the opening of said main track, and said outer switch rail in its inward movement being arranged to aline with the inner rails of said main and side tracks and effect the opening of said side track, and means for operating said switch.

12. A railway comprising a main track, an operating station, a side track leading from said main track adjacent said operating station, a pair of opposite thrust rails provided for each of said main and side tracks, said opposite rails of each track respectively constituting inner and outer rails with respect to location of said station, a switch movable transversely of said tracks and provided with opposite lateral thrust rails constituting inner and outer rails with respect to said station, said inner switch rail in its outward movement being arranged to aline with the outer rails of said main and side tracks to effect the opening of said main track, and said outer switch rail in its inward movement being arranged to aline with the inner rails of said main and side tracks and effect the opening of said side track, and means for operating said switch.

13. A railway comprising main and side tracks, gravity rails provided for each of said tracks and downwardly inclined toward each other, opposite lateral thrust rails provided for each of said tracks, a switch movable in opposite directions transversely of said tracks and provided with opposite lateral thrust rails arranged to open and close the main track with respect to the side track, and means for operating said switch.

14. A railway comprising main and side tracks, gravity rails provided for each of said tracks and downwardly inclined toward each other, opposite lateral thrust rails provided for each of said tracks, a switch movable in opposite directions transversely of said tracks and provided with opposite lateral thrust rails arranged to open and close the main track with respect to the side track, a hand lever arranged to operate and lock said switch in open position with respect to said side and main tracks, and automatic means upon the release of said hand lever for operating said switch to close said side track and open said main track.

15. A railway comprising main and side tracks, gravity rails provided for each of said tracks and downwardly inclined toward each other, opposite lateral thrust rails provided for each of said tracks, a switch movable in opposite directions transversely of said tracks and provided with opposite lateral thrust rails arranged to open and close the main track with respect to the side track, a movable stop bar arranged on said side track and adapted to hold a car on the downwardly inclined gravity rails thereof, means for operating said switch to open said side track with respect to said main track, and means actuated by the switch movement to operate said stop bar for the release of the car, whereby the latter is caused to be transferred by gravity from the side track to the main track.

Signed at Brooklyn, in the county of Kings and State of New York, this 24th day of June A. D. 1922.

CHRISTIAN G. FEUCHT.