

Jan. 4, 1927.

J. A. MILLER

1,613,118

PLEASURE RAILWAY STRUCTURE

Filed May 23, 1925

Fig. 1.

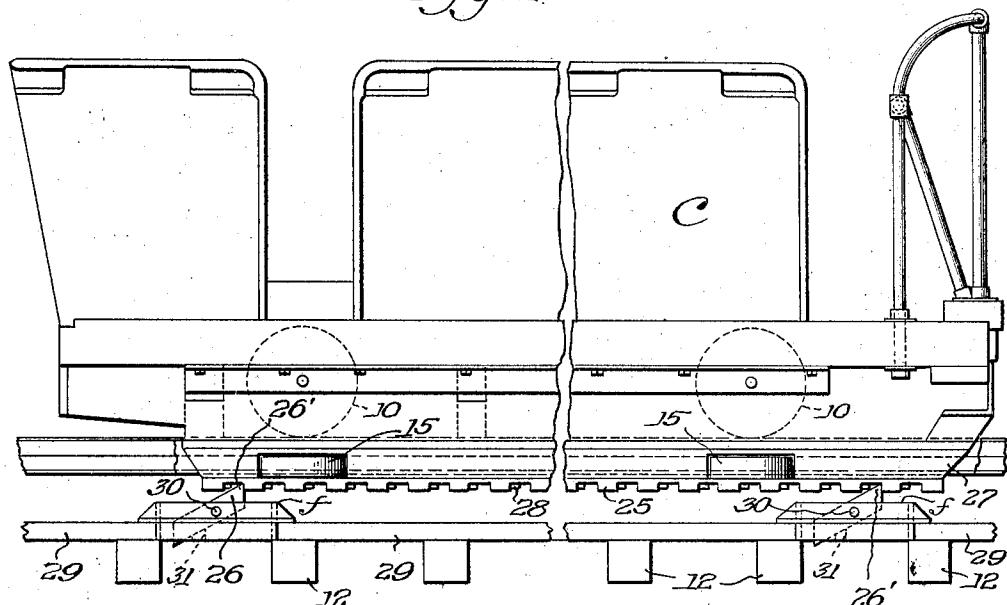


Fig. 2.

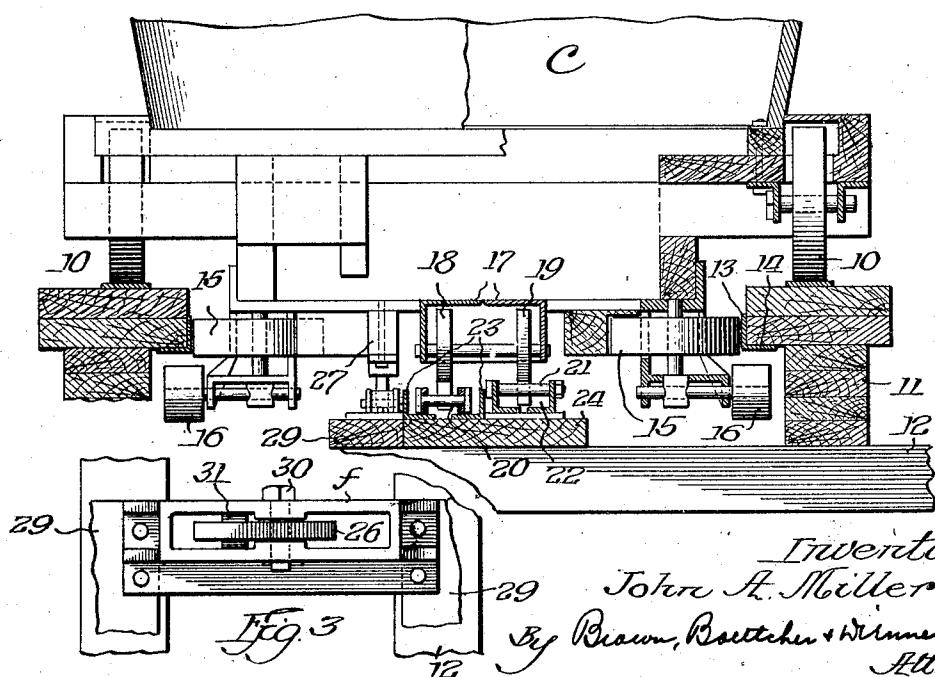


Fig. 3

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## UNITED STATES PATENT OFFICE.

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## PLEASURE-RAILWAY STRUCTURE.

Application filed May 23, 1925. Serial No. 32,257.

My invention relates to pleasure railway structures and particularly to improved safety mechanisms for causing the operation to be more reliable and more safe especially at the hoisting incline where the cars are hoisted by chains or cables to the starting summit or crest preparatory to traversing the railway structure back to the starting point at the station. These hoisting inclines are usually very steep and start from the station loading platform and rise to a considerable height in order to get the necessary potential energy for propelling the cars around the track structure. The cars are provided with a hoisting dog for engaging with the links of the hoisting chain to be thus propelled to the top of the starting summit. The hoisting chains may break, and in order to prevent retrograde movement thereof and of cars clutched thereto, safety dogs have been pivoted on the track structure in the path of the chain, as disclosed in my Patent No. 979,984, of December 27, 1910. Upon breaking of the chain, the clutch dog in the car may become detached, and at other times the clutch dog might become detached. To guard against such happening, each car has been provided with a safety dog for cooperating with a detent rack secured on the track structure. It has however happened that such safety dog would be broken, or would be caught, or otherwise out of service at the very time when it was needed and serious accidents have happened. Failure of the safety devices are a particularly serious matter on the hoisting incline, as there is nothing which will stop the released cars, but they will travel back with great velocity and momentum through the station and putting the passengers in the car and in the station in very great danger.

The purpose of the present invention is to eliminate the danger of escape of a car on the hoisting incline and to accomplish this each car is provided with a detent rack rigidly and permanently secured to the under side of the car, and along the track and at intervals shorter than the rack length on the cars, safety dogs are pivoted to catch and hold the cars in case any of the other safety devices should fail. As it is very improbable that a series of consecutive dogs will fail to function, an accidentally released car will be caught and held by one of the dogs

before it will have time to acquire any dangerous momentum.

On the drawings which illustrate my invention and its application,

Fig. 1 is a side elevational view of a car and the track structure;

Fig. 2 is an end elevational view of the car partly in section and the track structure partly in section; and

Fig. 3 is an enlarged plan view of one of the safety dog structures forming part of my invention.

The car C has the wheels 10 engaging the rail structures 11 which are mounted on the ties 12. The rail structures have the sides 13 and under rail surfaces 14, respectively, for engagement by the horizontal and vertical safety rollers 15 and 16, respectively, which limit the lateral and vertical play of the car while traveling rapidly over the rail structures.

Extending along the under side of the car is a channel beam structure 17 in which is supported the clutch dog 18 and the safety dog 19. The clutch dog 18 cooperates with the hoisting chain 20 to hoist the car to the top of the starting incline, and the dog 19 cooperates with the detent cross bars 21 of the rack structure 22. The hoisting chain is guided in a runway formed by the angle bars 23, and these runway parts and the rack structure 22 are mounted on beam structures 24 which are supported on the ties 12, as shown. Fig. 1 shows the track horizontal, but it is understood that in the actual railway structure this track will be on a steep incline along which the cars are propelled by the hoisting chain to the starting summit before starting their downward trip around the track structure back to the starting station from which the hoisting incline starts.

The additional safety mechanism, to which I have referred, comprises a detent or rack bar 25, and the detent dogs 26. Each car is preferably provided on its under side with a longitudinally extending beam 27 to the under side of which the rack 25 is secured, as by means of bolts or screws 28.

Each detent pawl 26 is pivoted intermediate its ends in a suitable supporting frame F, which frame is securely mounted on the track structure to accurately hold the pawls in the path of the detent rack on the cars. As shown, the frames are held in proper ver-

tical position on the ties by means of planks or beams 29. The pivot bolts 30 of the safety dogs are nearer to their upper ends so that the lower ends will be overweighted and 5 tend to hold the detent point 26' of the dogs up in the path of the rack teeth to be ready to interlock with the rack teeth to hold the cars in case of accidental release thereof from the hoisting chains or from the rack 10 structure 22. As the intervals between the detent dog structures are less in length than the length of the racks on the cars, there will always be at least one dog in engagement 15 with a rack ready to lock the cars in case of accidental release thereof. It may be that one of these dogs may fail to be in proper position, but it is improbable that a series of such dogs will be inoperative, and therefore in case a car is accidentally re- 20 leased when on the upgrade, it will be caught by one of the dogs before it will have a chance to acquire any dangerous momentum. To prevent overthrow of the dogs, each frame F has the abutment 31 extending 25 transversely below the lower end of the pawl and against which the weighted end of the pawl rests to normally hold the detent point 26' thereof in the path of the rack on the cars.

30 By securing the rack permanently to the under side of the cars, and by placing the dog structures on the track structure, the dogs are open to inspection, lubrication and repair, and their operativeness is thus as- 35 sured.

I claim:—

1. In a pleasure railway structure, the combination of a vertically inclined track, a vehicle traveling on said track, a longitudinal row of closely spaced detent abutments on the under side of said vehicle, and detent dogs pivoted along said track at intervals less than the extent of said row and projecting into the path of said detent abutment for engaging therewith to stop retrograde movement of said vehicle. 40
2. In a pleasure railway structure, the combination of a vertically inclined track section, a vehicle traveling thereon, a detent rack secured to and extending longitudinally along the under side of said vehicle, and the abutment teeth of said rack being close together, and detent dogs pivoted along said track at intervals less than the length of a car rack and projecting into the path of the rack to cooperate therewith to prevent retrograde movement of the cars. 50
3. In a pleasure railway structure, the combination of the hoisting incline, safety dogs positioned at intervals along said incline, cars adapted to be propelled up said incline, each car having a detent rack secured to its under side for cooperating with said safety dogs, and the abutment teeth on said rack being close together, the intervals between said safety dogs being less than the length of a rack whereby a rack will always be in cooperation with one of said dogs to prevent retrograde movement of the cars. 60

In witness whereof, I hereunto subscribe my name this 15th day of May, 1925.

JOHN A. MILLER.