

March 22, 1932.

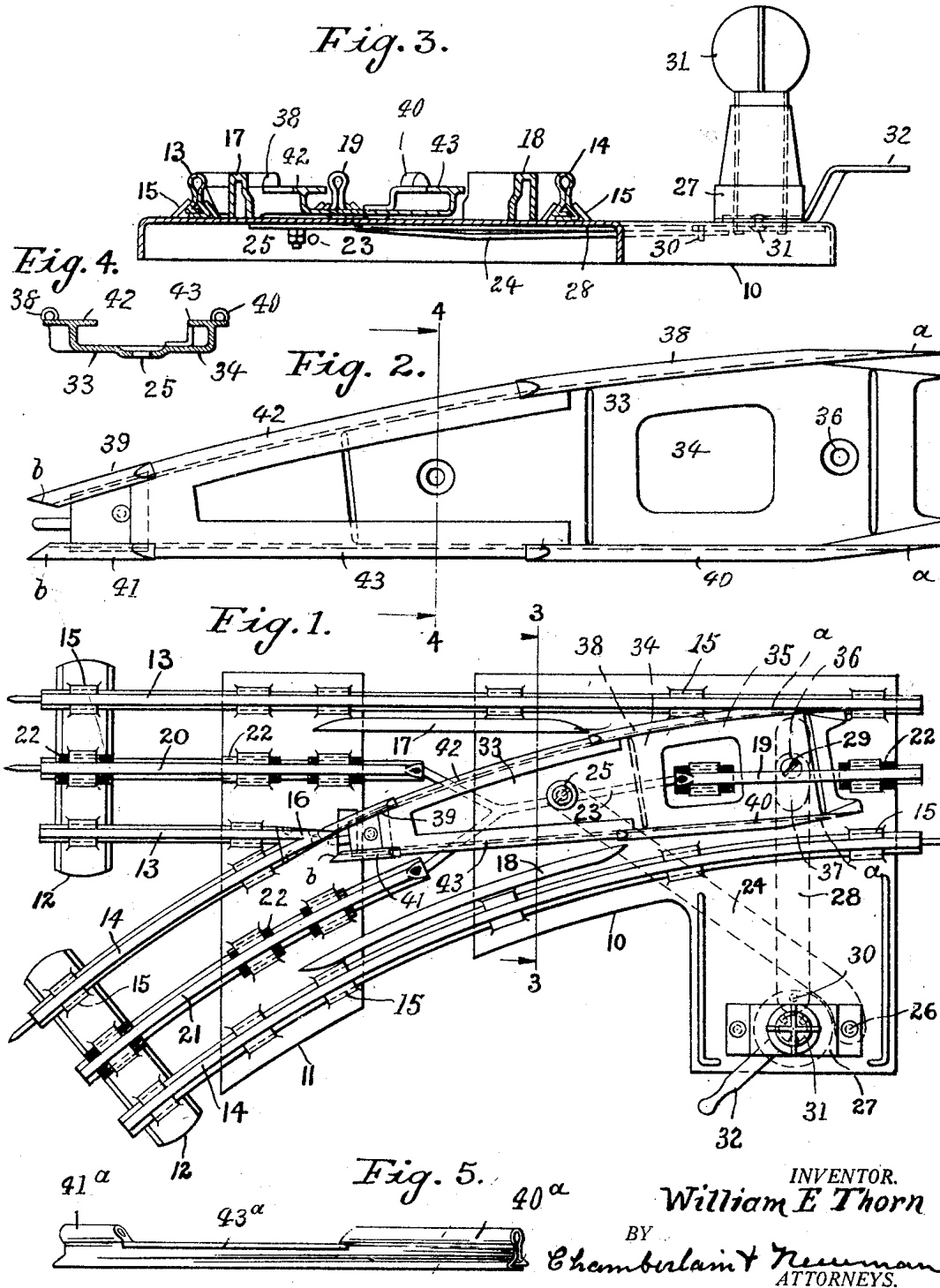
W. E. THORN

1,850,294

TOY RAILWAY TRACK SWITCH

Filed July 5, 1927

2 Sheets-Sheet 1



INVENTOR.
William E Thorn
BY
Chamberlain & Newman
ATTORNEYS.

March 22, 1932.

W. E. THORN

1,850,294

TOY RAILWAY TRACK SWITCH

Filed July 5, 1927

2 Sheets-Sheet 2

Fig. 8.

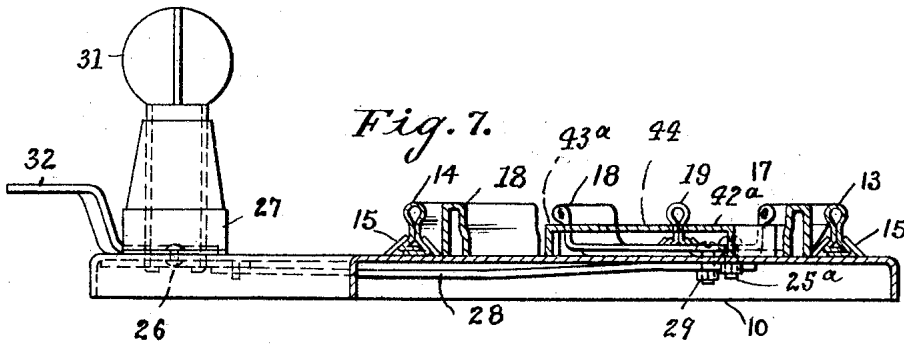
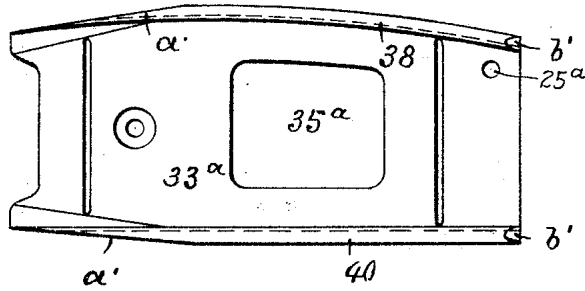


Fig. 7.

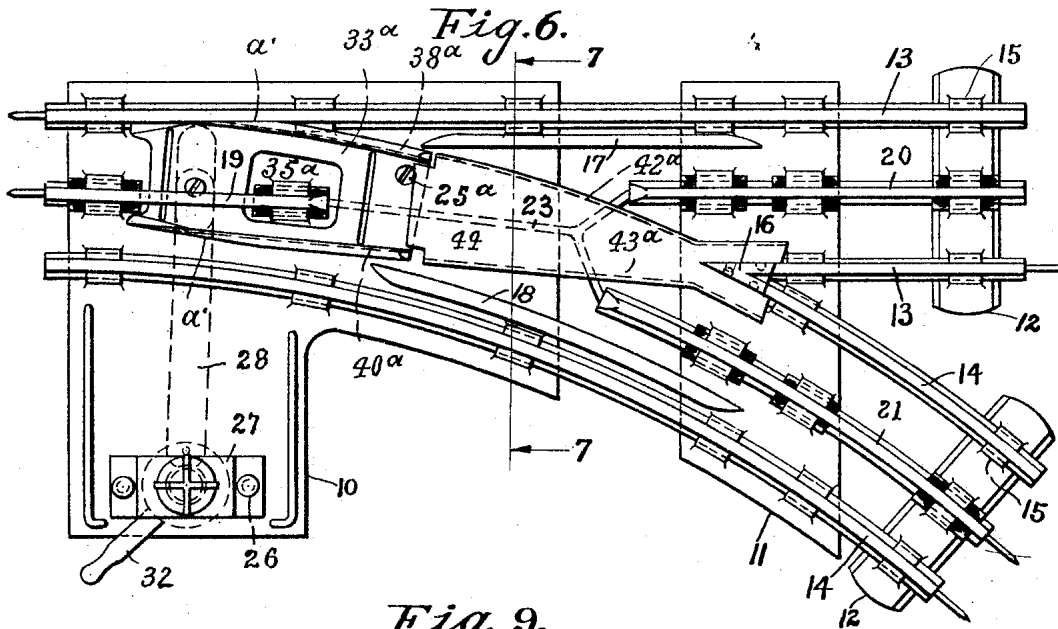


Fig. 6.



Fig. 9.

INVENTOR.
William E. Thorn
 BY
Chambalain & Newman
 ATTORNEYS.

UNITED STATES PATENT OFFICE

WILLIAM E. THORN, OF BRIDGEPORT, CONNECTICUT, ASSIGNOR TO THE IVES CORPORATION, OF BRIDGEPORT, CONNECTICUT, A CORPORATION OF CONNECTICUT

TOY RAILWAY TRACK SWITCH

Application filed July 5, 1927. Serial No. 203,356.

This invention relates to toy railway track switches and belongs more particularly to that class of tracks known as third rail tracks, upon which electric toy trains are operated.

An object of the invention is to generally improve upon switch sections of this class by making them more substantial and durable, thus less liable to distortion and breakage, and at the same time cheapen the cost of manufacture.

A further and more important object of the invention is to produce an all metal switch section for third rails that will meet the requirements of both a mechanically or electrically operated switch, whereby the trains may be directed from one track to another and so that the electric connections, as between the locomotive, cars and the track, may be constantly maintained while the train is crossing the switch and so that the lamps carried by the train will be kept lighted.

Another and important object of the invention is to electrically connect the inwardly projected and adjacently disposed inner end portions of the third rail beneath the rails of the track and to thus do away with the short sections of insulated third rails, commonly used in line with the surface and intermediate of the said end portion of third rails and to thus form a switch center, free from obstruction or contacting means as heretofore employed for the guidance of the electric shoe carried by the locomotive.

With these and other objects in view, the invention resides and consists in the construction and novel combination and arrangement of parts hereinafter more fully described, illustrated in the accompanying drawings, and pointed out in the claims hereto appended, it being understood that various changes in the form, proportion, size and minor details of construction within the scope of the claims may be resorted to without departure from the spirit, or sacrificing any of the advantages of the invention.

Similar characters of reference denote like or corresponding parts throughout the several figures of the accompanying drawings forming a part of this specification and upon which

Fig. 1 shows a plan view of one form of my improved switch, the same including a single piece switch center, connected to be manually and mechanically operated to open and close the switch;

Fig. 2 is an enlarged detached plan view of the switch center, included in switch shown in Fig. 1;

Fig. 3 is an enlarged cross sectional view of the switch, taken on line 3—3 of Fig. 1;

Fig. 4 shows a detached vertical cross section through the switch center, and taken on line 4—4 of Fig. 2;

Fig. 5 shows a detached side view of a modified form of rail as may be used on the switch center shown in the preceding figures;

Fig. 6 is a plan view of another form of switch, adapted to be operated both mechanically and electrically and including a fixed center switch member and a short pivotal switch center;

Fig. 7 is an enlarged cross sectional view taken on line 7—7 of Fig. 6;

Fig. 8 is a detached plan view of a short form of movable switch center shown in Figs. 6 and 7, and

Fig. 9 shows a detached side view of a modified form of rail adapted to be used for the switch center shown in Fig. 6.

As is customary with this class of toy, the switch is designed for the most part, to be made up of sheet metal parts, by the use of dies, of presses and other machines, so as to be quickly assembled in the most approved and practical way.

Electric toy railway tracks, adapted to use switches of this kind, are made up in portable form, of a number of inter-locking sections of standard lengths. My switch section is therefore, also made up of standard lengths

and is adapted to be used as a section of a track of the above sort, in place of and as a regular track section, and obviously, likewise, as a switch section for which it is especially designed.

Referring in detail to the characters of reference marked on the drawings and more particularly to Figs. 1 to 4 inclusive, 10 represents a base plate to which fixed and movable track sections and switch operating means are secured. 11 is an elongated tie plate that is employed at the intersection of the main line and branch tracks for rigidly supporting the two with relation to each other. 12 represents a standard type of metal cross tie or sleeper, for supporting the three rails of the track, as is employed on our regular third rail track sections. 13—13 represents the outer rails of the main line track and 14—14 similar rails of the branch track, which rails are secured to the supporting members 10, 11, and 12. The rails are secured by being set between stamped-up tongues 15 that are later swedged down upon opposite flanges of the rails 13 and 14. The outer curved rail 14 of the branch track extends in upon the plate member 10 and projects from the end thereof in the same manner as does the outer rail 13 and thereby forms, for a short distance, a part of one of the outer rails for the main line track. The inner straight rail 13 and the outer curved rail 14 intersect forming a frog 16 over which latter, wheels of the train always pass when travelling over either the straight or branch track.

The outer rail 13 is provided upon its inner side with a straight guard rail 17 that preferably extends from the plate member 10 to the plate 11 and the outer curved rail 14 is also provided upon its inner side with a curved guard rail 18 that is likewise attached to the said base plates 10 and 11. Both of these guard rails are positioned in proper spaced relation to the outer rails to form a uniform space therebetween to receive flanges of the car wheels. These guard rails are located on opposite sides of the movable switch center and are employed to insure the safe travel of the wheels of the cars over the flat rails of the movable switch center and to prevent any possible derailment of the train when travelling through the switch, as will again be referred to.

19, 20 and 21 represent short sections of third rails employed in my switch and which are insulatively connected to the plates and ties 10, 11 and 12, by attaching means somewhat like that employed for the fastening of the outer rails to the cross ties, excepting that a piece of insulating material designated as 22 is used between the said third rail and said cross ties. The ends of these third rails 19, 20 and 21 are electrically connected by a wire 23 that is attached to the inner end of

the rail 19 and carried down through the base plate 10, thus below the rails and extended forward and having one branch connected with the under side of the third rail 20 of the main line track and another branch connected with the under side of the third rail 20 of the main line track and another branch connected to the under side of the third rail track of the branch line. This wire obviously serves to bind the ends of the third rails, yet is carried down out of the way so as to not interfere with the movement across the switch center of the electric shoe carried by the locomotive and taking the current off the third rail and in this respect does away with the broadened section of third rail commonly employed above the switch center and intermediate of the rails carried thereby. The doing away of this broadened short rail section referred to, does away with any possible trouble which might arise by the catching of the shoe upon the ends and side edge thereon.

The member shown in dotted lines in Fig. 1 and indicated as 24, serves as a brace to stiffen the base plate 10 and to more rigidly support the switch parts carried thereon. This brace has one end connected to the pivotal stud 25 that carries the switch center and the other end to a stud 26 used to secure the bracket 27, in which the switch operating means is hingedly supported, to the base plate 10. A link 28 has its inner end pivotally connected to a stud 29 attached to one end portion of the base of the switch center and the other end 30 to a rocker post 31 supported in the before mentioned bracket 27 secured to an outwardly extended portion of the base plate 10. This switch post, its link connection and switch center, is connected to be mechanically operated through a lever 32 attached to the rocker post and adapted to be moved in a way to swing the switch center backward and forward upon its pivot and its rail end into and out of engagement with the respective track rails.

33 represents the movable switch center see Figs. 1 to 4 inclusive, entirely of metal and principally of sheet metal and as will be seen includes an elongated sheet metal base 34 having an opening 35 therein, that serves to accommodate a support for the before mentioned third rail 19. The stud 25 pivotally connects the switch center to the base plate 10 and whereby the opposite end portions of the rails carried by the switch center are made to contact with the outer rails of the main and branch tracks as will again be referred to. 36 represents a hole in the base 34, for the before mentioned stud 29 that extends through a slot 37 in the tie plate 10 for connection with the link 28, the other end of which link is pivotally connected with the switch operating means as before described.

The base 34 of movable switch center 33

further includes upwardly disposed wheel supporting members or rails along opposite sides for the guidance and support of car wheels (not shown) over the same. These supporting members extend from one end of the switch center to the other and in part include hollow rail portions 38 and 39 along the curved side of the switch center and hollow rail portions 40 and 41 along the straight side portion of the switch center. The rail members 38 and 39 each have inner tapered end portions $a-a$ that are cut to fit and form a thin edge to engage the inner sides of the outer rails 13 and 14 when the switch center is adjusted for that purpose. The outer ends of the rail portions 39 and 41 carried by this base of the switch center are also provided with beveled end portions $b-b$ that are beveled to engage the side faces of the frog 16 so as to form continuations of the two rails formed by said frog. The rail portions 39 and 41 are thus positioned on one end of the switch center while the rail portions 38 and 40 are located upon the opposite end. The rails 38 and 39 being in alignment along the curved edge portion of the switch center, while the rails 40 and 41 are in similar alignment along the straight edge portion of the switch center. Between the inner end portions of these two pairs of said rails are provided plain flat-surfaced wheel runways 42 and 43 on which the flanges of the car wheels roll, and are positioned just far enough below the top surface of the rails so that as the rims of the car wheels leave the inner beveled ends of the rails 38, 39, 40 and 41, the wheel flanges will roll upon and along the flat track surface until the wheels engage and run upon the other end portions of the aligned rail of the switch center.

These rails while preferably, made as above described, of separate end rail portions and intermediate flat runway portions, can be made of a one piece rail section as illustrated in Fig. 5, and wherein is shown a rail having an integral relatively low flat portion 43^a intermediate of the higher end portions 40^a and 41^a. A single rail of this type would be employed for each side of the switch center so that the intermediate cut away portions would allow the electric contact shoes (not shown), carried by the locomotive, to freely pass over and through, without engaging the track rail of the switch center, as said shoe passes from the live rail section 19 to the third rail sections 20 and 21 and vice versa and whereby possibility of short circuiting is prevented.

In Fig. 9, I have also shown a modified form of rail corresponding in a measure with that shown in Fig. 6, and includes the higher frog portion 16 at one end, the flat intermediate runway 43^a and the adjacent higher track member 40^a.

The modified form of the invention illustrated in Figs. 6, 7 and 8 show the two lower

flat-surfaced portions 42^a and 43^a formed of one piece and secured to the tie plates 10 and 11 of the switch. In this form, the frog 16 serves as the higher rail portions for one end and side rails 38^a and 40^a of the movable switch member 33 as the higher rail portion for the other end. In this case the flat lower plain of the fixed member 44 serves to form short runways 42^a and 43^a for the flanges of the car wheels travelling over the two tracks.

This form of switch includes a relatively shorter movable section of switch center than that shown in the other form and as is used in connection with the fixed member 44 before referred to, having wheel runways in line with, but below the surface of the rail portions connected therewith at each end. The movable switch section 33^a is provided with an opening designated as 35^a and serves the same purpose as the opening 35 shown in Fig. 1. The pivot 25^a for this movable switch center is arranged adjacent the larger end of the fixed member 44 and its side rails have tapered inner end portions $a'-a'$ corresponding with a of the other switch section and has beveled inner end portions $b'-b'$ that correspond with those of the other form previously described. This switch center section is obviously lighter than the other and may be operated with less power and friction, either by the mechanically operating mechanism shown and described or by electrically connecting operating means, not shown.

It will be obvious that as the switch center is shifted on its pivot 25 by a manipulation of the lever 32 the larger end portion, having the beveled rail ends a are moved against the inner sides of the rails 13 and 14 in a way to permit the trains to travel straight through on the main line, or to be switched from the main line to the branch line, as desired. The live rails 19, 20 and 21 together with their connecting member 23 are all insulated from the outside rails and serve to form a suitable circuit for the operation of the trains over either the said main line or branch track. In this connection it might properly be explained that the form of contacting means carried by the locomotive, not shown, includes two spaced apart shoes or rollers, both supported on a yieldable spring member connected with the electric movement of the locomotive. These rollers are spaced apart, one in advance of the other so that one will engage the beveled end of the aligned third rail member, before the second roller or shoe leaves the end of the live-rail over which the train has been travelling, and so that the locomotive is sure to pick up the current from the forward rail section before leaving the other.

Having thus described my invention, what

I claim and desire to secure by Letters Patent is:

1. The combination with a base, of a rail for toy train tracks movably mounted thereon and having a full height and rounded top surfaced end portion for the support and guidance of the rim of a car wheel and an unobstructed intermediate lower and flat surfaced portion for the rolling engagement of the flange of a car wheel. 70
2. The combination with a base, of a rail for toy train tracks movably mounted thereon and having full height and rounded top surfaced end portions and unobstructed intermediate lower aligned flat surfaced portion, the said rail end portions serving for the engagement of the rim of a car wheel and the lower aligned intermediate flat portion for the rolling engagement and support of the flange of a car wheel. 75
3. A toy electric railway switch section, comprising in part, a movable switch center including a base, a rail supported thereon and having full height end portions and an intermediate surfaced portion lower than the level or height of the end portion, the said end portion serving to support and guide the rim of a car wheel and the flat portion to support the flange of a car wheel. 80
4. In a switch for toy electric railway tracks, the combination with base plates, a main track and a branch track supported thereon, a pivotally mounted switch center for guiding toy trains to and from said tracks, a rail supported on said switch center having end portions of corresponding height to that of the main and branch line rails, and a central surface portion below that of the top surface of end rail portions, to receive the flanges of a car wheel. 85
5. In a switch section for toy electric railway tracks, the combination with a base plate, main track rails and branch track rails supported on said base, a movable switch center pivotally mounted on said base between said rails for guiding toy trains to and from said rails, guard rails positioned on the inside and in spaced relation to said track rails, rails supported on the switch center having intermediate flat surfaced wheel flange engaging portions on a plain below that of the top surface of the end portions of the rail. 90
6. In a switch section for toy electric railway tracks, the combination with a base plate, a main track and a branch track supported on said base, a movable switch center pivotally mounted on said base for guiding toy trains to or from one or the other of said tracks, rails supported along the opposite side edge portions of said switch center, said rails supported along the opposite side edge portions of said switch center, said rails having end portions corresponding in height to that of the main and branch line rails to receive the rim of a car wheel, and a flat rail portion of lesser height than that of the end rail portions, upon which the flange of a car wheel rolls. 95
7. In a switch section for toy electric railway tracks, the combination with a base plate, a main track and a branch track supported on said base, a movable switch center pivotally mounted on said base for guiding toy trains to or from one or the other of said tracks, means for operating said switch center to shift the same and its rails, in alignment with rails of the main and branch line tracks, rails supported on the switch center, having end portions of corresponding height to that of the main and branch line rails and flat surface portions adjoining said end portions, of a lesser height than that of the end portion. 100
8. A switch section for toy electric railway tracks, the combination with a main track and a branch track, guard rails positioned adjacent to and in spaced relation to the inside of said main and branch track rails, a lower rail portion intermediate of the two outer rails of said main and branch tracks and below the top surface of said main and branch track rails forming a free passageway for the rail shoe of a locomotive to pass through the switch section without contacting with a running rail. 105
9. A toy electric railway switch, comprising a base, main and branch track rails, guard rails, a switch center including a track rail, and a flat section over which the wheels of the train roll, said flat section being on a lower plane than that of the switch. 110
10. A toy electric railway switch, comprising a base, main and branch track rails, a third electrically energized rail, guard rails, an unenergized switch center including track rails, and a flat section over which the wheels of the train are guided, said flat section being on a lower plane than that of the other rails of the switch. 115
11. A toy electric railway switch, comprising a base, main and branch track rails, guard rails, a pivotally mounted switch center including track rails, and a flat section intermediate said main and branch track rails over which the wheels of the train are guided, said flat section being on a lower plane than that of the rails of the switch. 120
12. A toy electric railway switch, comprising a base, main and branch track rails, a third electrically energized rail, guard rails, and an unenergized switch center including track rails, said switch center being formed to leave a free space between the third rails to allow the shoe of a train to pass over without coming in contact with any part of said switch member. 125
13. A switch for a toy electric train, comprising a base, rails thereon forming main and branch tracks, third rail sections on the base of both tracks, the inner ends of the sections being spaced apart, a switch member 130

for enabling a train to pass over the main track or to take the branch track, said switch member being formed to leave a free space between the third rail sections to prevent a shoe of a train coming in contact with any part of said switch member as it passes over the space between two of the third rail sections and means for actuating the switch member.

Signed at Bridgeport, in the county of Fairfield and State of Connecticut, this 30th day of June, A. D. 1927.

WILLIAM E. THORN.

15

20

25

30

35

40

45

50

55

60

65