A. S. REMSBERG.

SWITCH FOR OVERHEAD TROLLEY TRACKWAYS.

APPLICATION FILED AUG. 30, 1919.

1,355,618.

Patented Oct. 12, 1920.

5 SHEETS—SHEET 1.

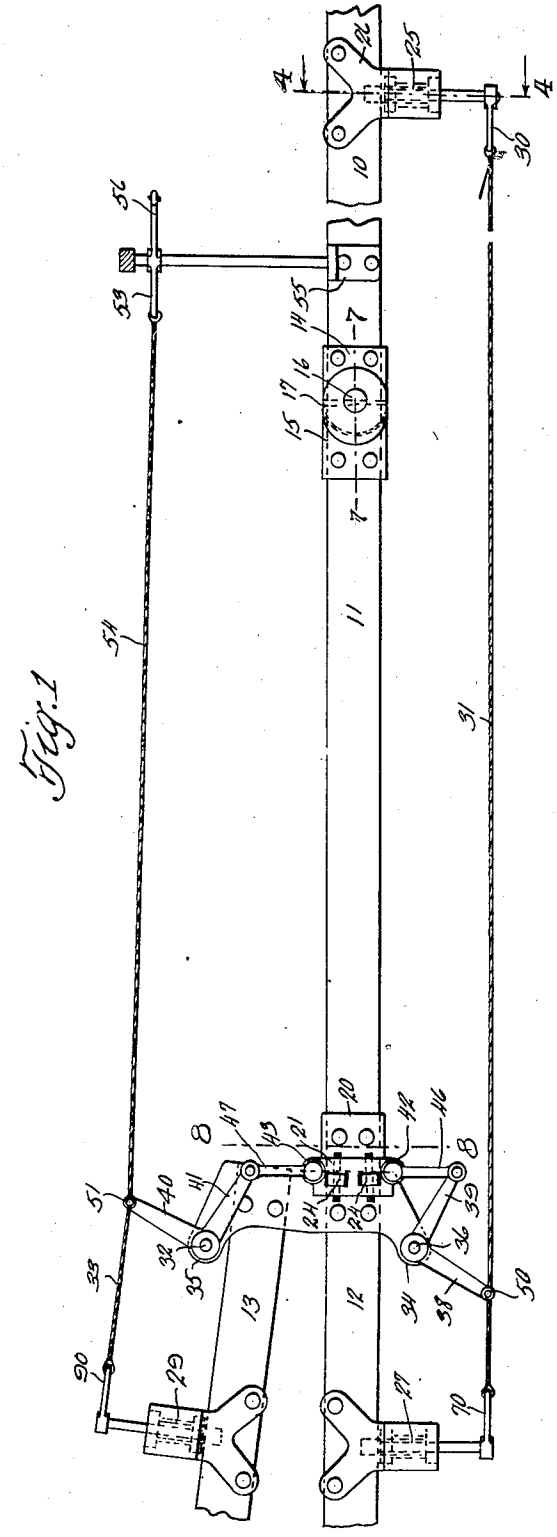


Fig. 1.

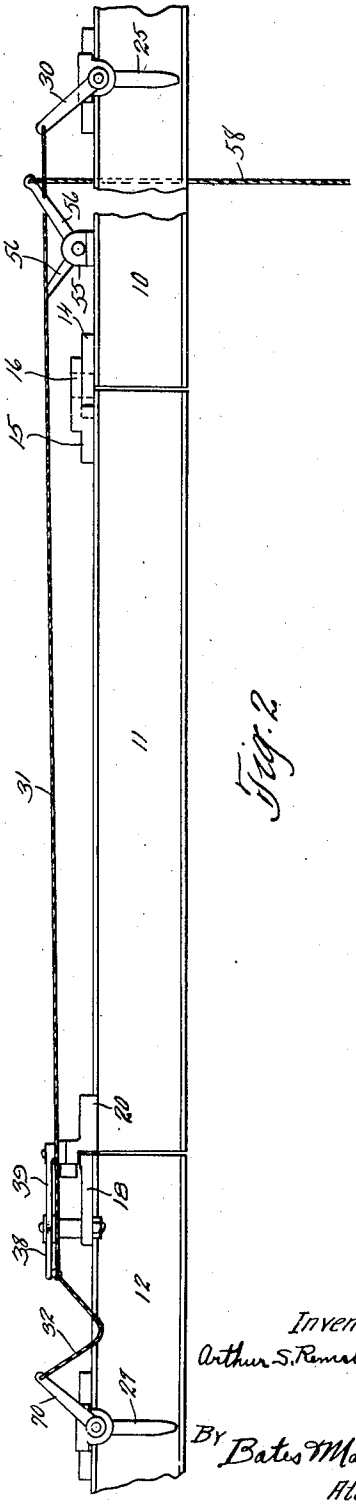


Fig. 2.

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5 SHEETS—SHEET 2.

Fig. 3

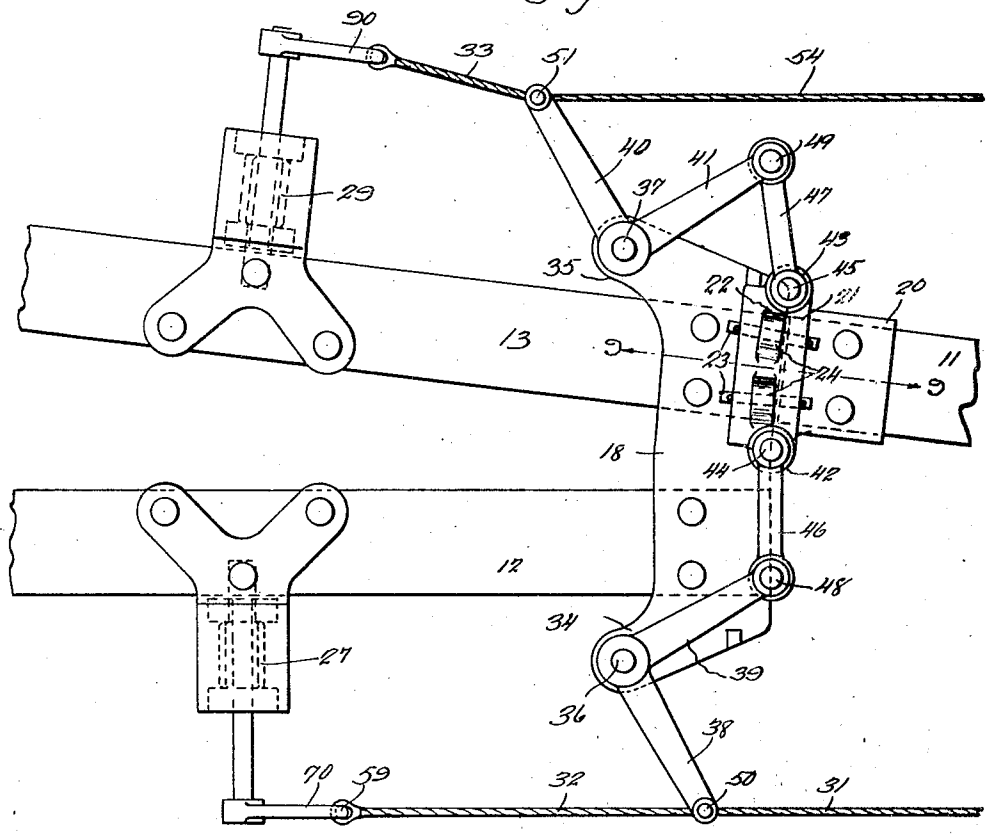
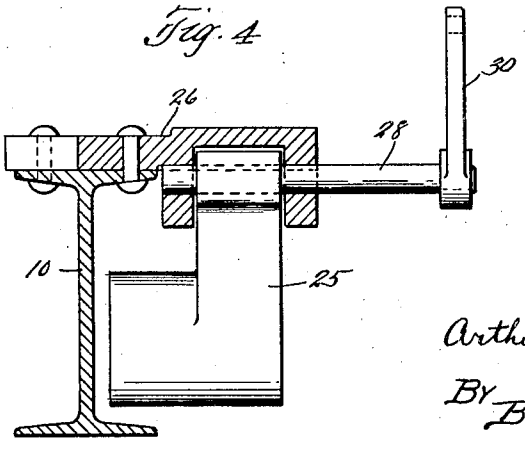


Fig. 4



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5 SHEETS—SHEET 3.

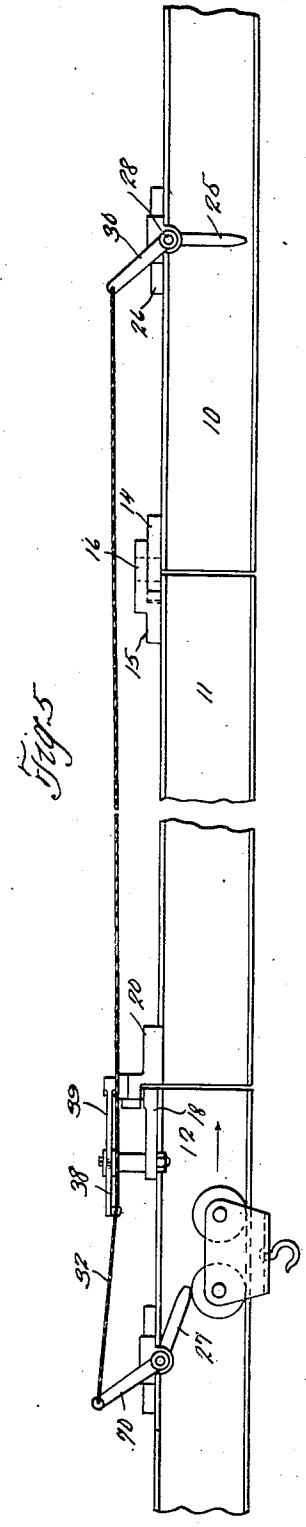


Fig. 5

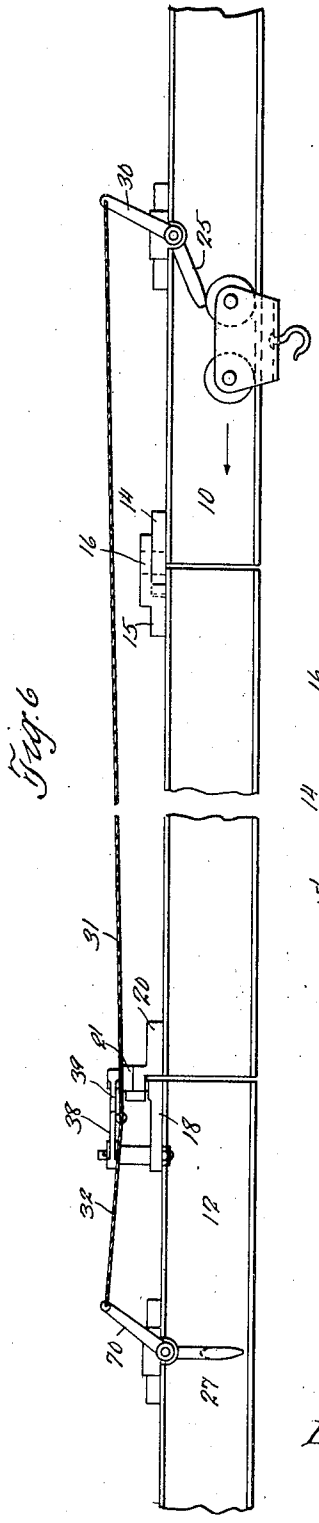


Fig. 6

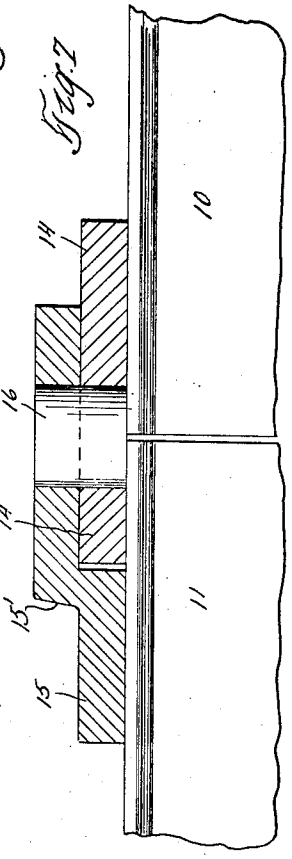


Fig. 7

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5 SHEETS—SHEET 4.

Fig. 8

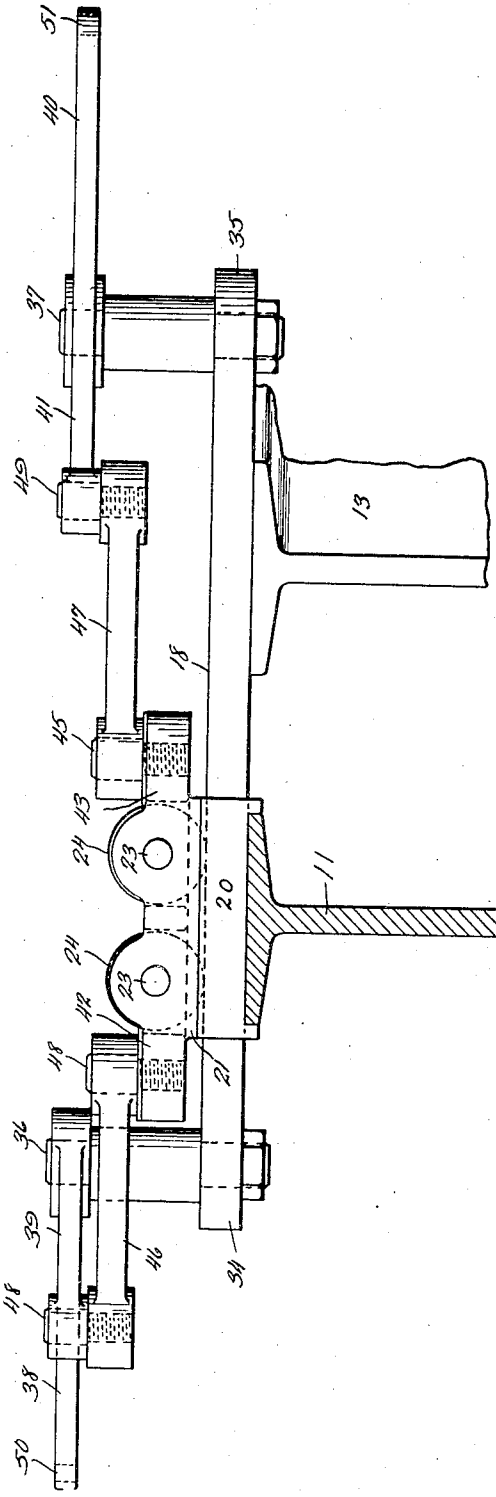
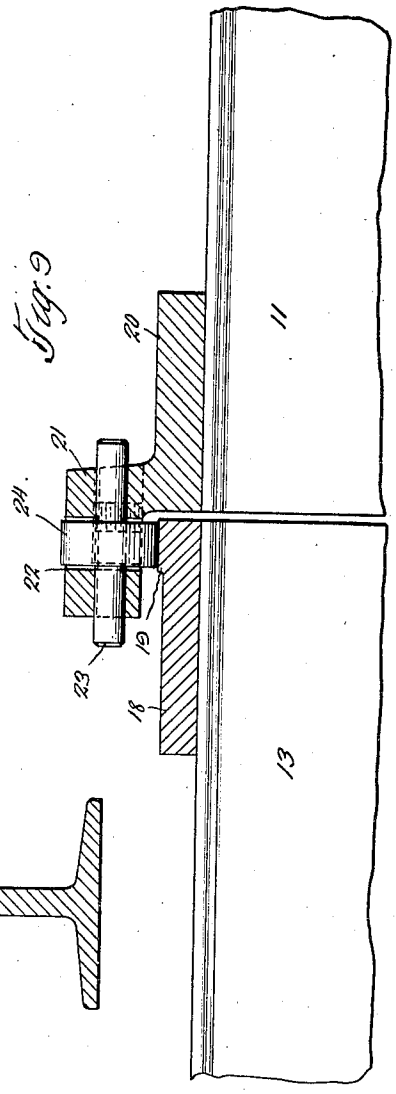


Fig. 9



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5 SHEETS—SHEET 5.

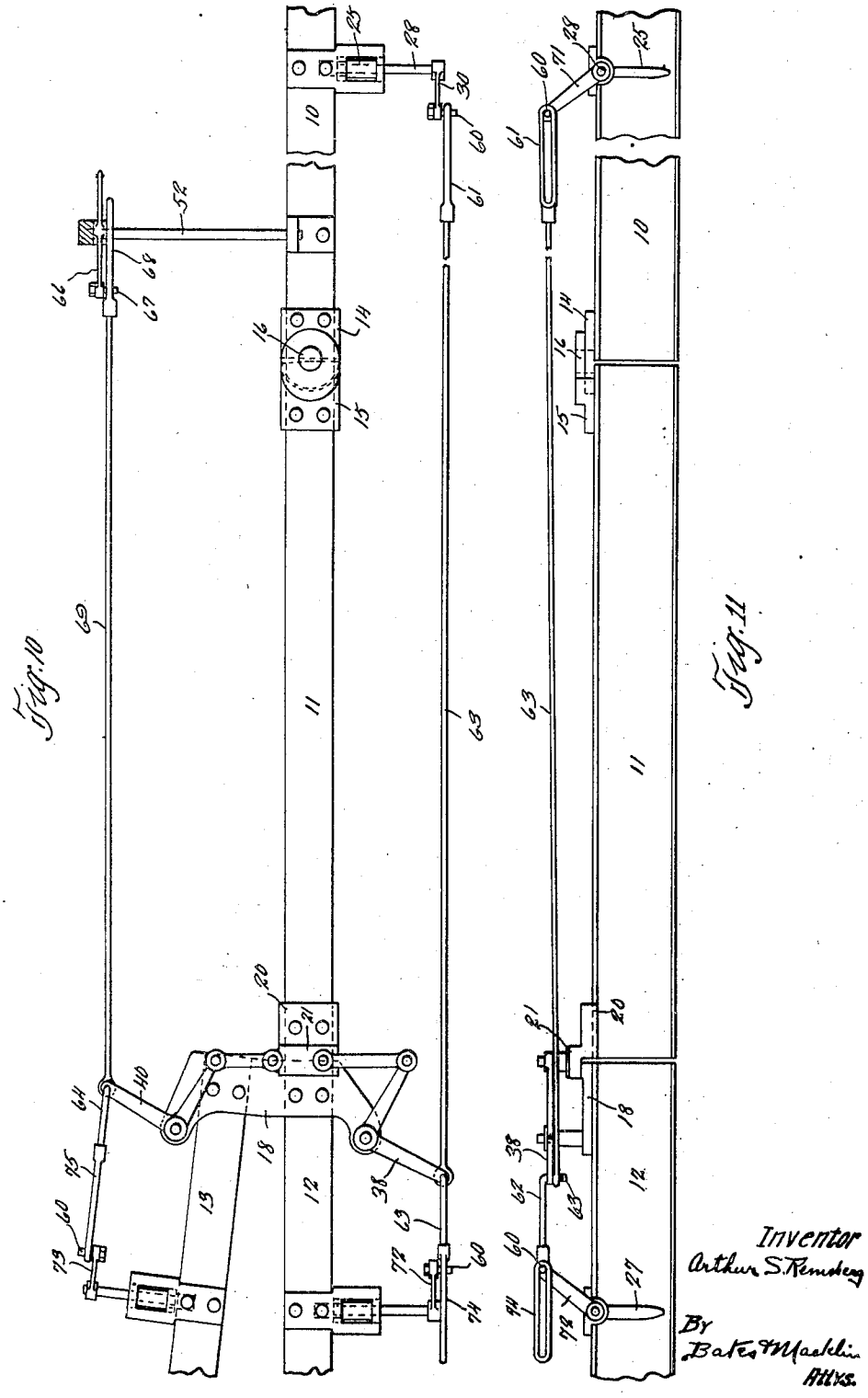


Fig. 10

Fig. 11

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UNITED STATES PATENT OFFICE.

ARTHUR S. REMSBERG, OF LAKEWOOD, OHIO, ASSIGNOR TO THE CHISHOLM-MOORE MFG. COMPANY, OF CLEVELAND, OHIO, A CORPORATION OF OHIO.

SWITCH FOR OVERHEAD TROLLEY-TRACKWAYS.

1,355,618. Specification of Letters Patent. Patented Oct. 12, 1920.

Application filed August 30, 1919. Serial No. 320,823.

To all whom it may concern:

Be it known that I, ARTHUR S. REMSBERG, residing at Lakewood, in the county of Cuyahoga and State of Ohio, have invented a certain new and useful Improvement in Switches for Overhead Trolley-Trackways, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

This invention relates to overhead trackways for hoist trolleys and the like, and an object of the invention is to provide simple and effective means for automatically switching the traveling trolley between a main track and branches thereof and for preventing the trolley reaching an open switch and falling from the trackway.

In carrying out this object, I provide for the automatic control and positioning of the switch point in advance of the moving trolley regardless of what portion of the trackway it is on, whether on a main portion, or on either of two branches, and regardless of the direction in which the trolley may be moving.

A more specific object is to provide simple mechanism whereby the passage of a trolley over a fixed portion of trackway will by reason of such movement cause a movable switching portion (the "switchpoint") of the trackway to coöperate with the desired one of two fixed branches diverging therefrom.

This invention is particularly well adapted for use with overhead trackways of I-beam construction and includes simple and effective means for supporting and holding the movable switchpoint in position.

My invention further includes manual means for shifting the switchpoint to cooperate with either branch track as desired without in any way interfering with the functioning of the automatic safety control.

The invention is hereafter more fully explained and its essential characteristics set out in the claims.

In the drawings Figure 1 is a plan of an I-beam trackway having a pair of branching trackways and a movable switchpoint combined with my automatic and manual operating mechanism; Fig. 2 is a side elevation of the structure of Fig. 1 from the right; Fig. 3 is an enlarged plan showing the mechanism for shifting the switchpoint; Fig. 4 is an enlarged sectional view on the line 4—4 of Fig. 1 showing the tripping means actuated by the trolley for shifting the switchpoint; Fig. 5 is a side elevation of the structure of Fig. 1 illustrating the position of the trip mechanism on one of the branches while being actuated by a moving trolley; Fig. 6 is a view similar to Fig. 5 showing a trolley moving in the opposite direction on a main portion of the trackway and actuating the trip mechanism thereon; Fig. 7 is an enlarged sectional detail on the line 7—7 of Fig. 1 showing the means for supporting the pivotal end of the switchpoint; Fig. 8 is an enlarged sectional view on the line 8—8 of Fig. 1 looking downwardly and showing in end elevation the structure for supporting and shifting the movable switch point; Fig. 9 is an enlarged sectional detail on the line 9—9 of Fig. 3; Fig. 10 is a plan view similar to Fig. 1 showing modified details of construction; and Fig. 11 is a side elevation of the same.

As shown in the drawings, 10 designates the main portion of the trackway, 11 a movable switchpoint connected therewith, and 12 and 13 a pair of branch trackways with either of which the switchpoint is adapted to coöperate. Each of the members mentioned is preferably of I-beam section. The switchpoint 11 is pivoted to the main trackway and its horizontal flanges are cut to allow limited lateral movement of the switchpoint. To accomplish this pivotal mounting I employ overlapping plates 14, 15, riveted or otherwise secured to the upper side of the top flange of the I-beams constituting the main trackway and switchpoint. A vertical pin 16 passes through alined openings in these plates. As clearly shown the plate 14 secured to the end of the track I-beam 10 is flat and has a rounded end overlapping the abutting end of the switchpoint I-beam 11. The plate 15, secured to the end of the latter, is provided with an arcuate recess and a raised portion overlapping the plate 14. It will be observed that the junction between the trackway positions 10 and 11 above described not only permits pivotal movement of the switchpoint 11 but also supports the latter by means of the overlapping of the hinge members 14 and 15.

The connection between the opposite end of the switchpoint 11 and the branch trackways 12 and 13 is best shown in Figs. 3 and

9. Across the top of the adjacent ends of the trackways 12 and 13 I have shown a plate 18 riveted to the upper flanges of the I-beams and having at one side a slightly raised portion 19 constituting a lateral trackway hereinafter more fully described. The adjacent end of the switch point is likewise shown provided with a plate 20 riveted to the upper flange of the I-beam, the side adjacent the trackways 12 and 13 being offset and overlapping the plate or bridge member 18. The offset portion 21 is shown provided with two slots 22 in which are suitably mounted on pintles 23, rollers 24, two in number, which travel over a raised finished surface 19 on the edge of the plate 18 and constituting a trackway therefor. The two pintles 23 are shown radially arranged with respect to the pivot 16 of the switchpoint 11. By this construction the end of the switchpoint 11 adjacent the branch trackways 12 and 13 is supported on the rollers 24 whereby it may move freely from alinement with one branch trackway into alinement with the other.

In the preferred embodiment of my invention I provide a system of tripping and shifting elements interconnected by lost motion devices in such a manner that as a trolley approaches the switchpoint from the main or either branch trackway, the switchpoint if in proper position to receive the trolley will remain in such position undisturbed, and if not will be automatically shifted into such position. To accomplish this I have provided trip levers shown in detail in Fig. 4, which are positioned at points on the main and branch trackways in the vicinity of the switchpoint to be actuated by the trolley. The connections between the trip levers and the I-beams are the same in each case.

To the upper flange of the main track I-beam at the approach to the switchpoint, I have shown secured by suitable rivets a plate-like bracket 26 having bearings supporting a laterally extending rock shaft 28. Secured thereto is a trip member 25 adapted to be engaged by the trolley traveling along the trackway. Rigidly carried on the outer end of rock shaft 28 is an arm 30. As above indicated, similar trip lever connections are provided on the approach of both branch trackways, trip members 27 and 29 and arms 70 and 90 respectively, being shown clearly on the two branch trackways in Fig. 3. The arms 30, 70 and 90 for the trip members are connected with the switchpoint shifting mechanism in the preferred form of my invention by a lost motion means, which may comprise flexible members such as ropes or cables, 31, 32, and 33.

The switchpoint shifting means is best shown in Figs. 1, 3 and 8. The plate 18 across the terminals of the branch trackways 12 and 13 is shown provided with ears 34 and 35 on which are pivoted at 36 and 37 bell crank levers, the first having arms 38 and 39 and the second arms 40 and 41. The plate 21 is shown having ears 42 and 43 on which are pivoted at 44, 45, links 46 and 47, the opposite ends of these links being pivoted at 48, 49 to the arms 39 and 41 of the bell cranks previously described. The end of the arm 38 of the first described bell crank is connected at 50 with one end of flexible elements, 31 and 32, while the end of arm 40 of the second described bell crank is connected at 51 with the flexible element 33. In this manner the plate 20 on the free end of the switchpoint is connected through link 46, bell crank arms 39, 38 and connection 50 with trip lever arm 30 on the main trackway by flexible element 31 and with trip lever arm 70 on the branch 12 by flexible element 32, and is also connected though link 47, bell crank arms 41, 40 and connection 51, with trip lever arm 90 on the branch 13 by flexible element 33.

Manual means are provided in addition to the automatic tripping and shifting means just described whereby a trolley on the main portion 10 of the trackway may be directed to either branch 12 or 13 as desired. As shown in Fig. 1, this means consists of a manually movable rock shaft with a bell crank lever carried thereby having an arm 53 flexibly connected by a rope, cable or similar flexible element 54 to the bell crank arm 40. The shaft 52 may be suitably mounted in bearings formed by upturned ears of a bracket 55 secured to the trackway 10. The arm 56 of the bell crank may have depending therefrom a rope or chain whereby the bell crank shaft 52 may be rocked and the switch point shifted from one branch track to the other.

A modified form of the connections between the trip levers and the bell crank mechanism coupled with the switchpoint is shown in the embodiment of my invention illustrated in Figs. 10 and 11. Instead of the flexible connections between the trip levers and the bell crank levers on the plate 18, relatively rigid bars are employed, having a sliding pin and slot connection at their ends. As shown, the trip lever arms 71, 72 and 73 correspond precisely with arms 30, 70 and 90 respectively of the embodiment first described, except that instead of terminating in an eye portion as shown at 59 in Fig. 3 to receive the end of a cable, the several arms are provided at their ends with lateral projections 60 which are slidably embraced by the looped ends 61, 74 and 75 of links 63, 62 and 64 respectively. The links 62 and 64 are shown, having at their opposite ends downwardly directed hook portions engaging openings in the ends of bell crank levers 38 and 40 respectively, and

link 63 has an eye in the end opposite the loop 61 engaging the hooked end of link 62. The rock shaft 52 may be operated manually to shift the switchpoint, and in this modified form is shown carrying rigid therewith an arm 66 having a lateral projection 67 engaging the looped end 68 of a link 69 connected to bell crank arm 40 through the hooked end of link 64.

In the operation of my device, the trip levers are so connected to the bell crank shifting mechanism through the lost motion devices that the movement of a trolley past any tripping lever will insure continuous trackway for the trolley. Thus if a trolley on branch 13 be approaching the switchpoint in the position shown in Figs. 1 and 10, actuation of the tripping lever on that branch will cause the end of the switchpoint to be shifted from alinement with branch 12 into alinement with branch 13. On the other hand, if the trolley were on branch 12 approaching the switchpoint in the positon shown in Figs. 1 and 10, or on branch 13 approaching the switchpoint in the position shown in Fig. 3, actuation of the tripping lever on that branch, through the lost motion connection, would not disturb the switchpoint which stands in position to receive the advancing trolley. When the trolley is on the main portion 10 traveling toward the switchpoint, actuation of the trip lever on that portion will throw the switchpoint into alinement with the right hand branch 13 unless the switch is in that position, in which case the tripping lever will merely act idly through the lost motion connection. If desired to send the trolley onto the left hand branch 12, the rock shaft 52 may be manually oscillated to shift the switchpoint from branch 13 to branch 12 by the connections described. As will be apparent both the flexible members and the sliding pin and slot lost motion connections, operate in a similar manner to insure continuous trackway in advance of the trolley.

Having thus described my invention, what I claim is:

1. The combination with overhead main and branch trackways, of a movable portion of trackway adapted to connect the main trackway with either branch, a trolley traveling over said trackways, and means automatically operated through lost motion cable connections consequent upon the trolley approaching the movable portion from any direction and adapted to shift it automatically to insure continuous trackway in advance of the trolley.

2. In combination with a suspended main track and branch tracks, of a movable switchpoint pivotally secured to the main track and supported for sliding engagement between either of the branches, a trolley traveling on said tracks, means mounted adjacent to the tracks engaged and operated by the trolley, and lost motion connecting means between said means and the free end of the switchpoint.

3. In combination with suspended main and branch trackways, of a movable switchpoint pivotally connected to and supported by the main track, the opposite end of the switchpoint having supporting rollers, a transverse bridge member adjacent to the ends of the branch tracks whereby the switchpoint may be supported while being shifted from one branch to the other, a trolley traveling on said tracks, means mounted adjacent to the tracks engaged and operated by the trolley, and lost motion connecting means between said means and the free end of the switchpoint.

4. In combination with suspended main and branch trackways, of a movable switchpoint, adapted to be shifted from one branch to the other, a trolley traveling on said tracks, means mounted adjacent to the tracks engaged and operated by the trolley, and flexible lost motion connecting means between said means and the free end of the switchpoint.

5. In combination with fixed overhead main and branch trackways and a trolley traveling over said trackways, of a movable switchpoint for connecting the main track with either of the branches, comprising a pivotal connection between the switchpoint and main track, means attached to the switchpoint and movably supported by the adjacent fixed trackway portions, shifting means pivoted to the branch trackways and connected to the adjacent end of the switchpoint, movable means projecting into the path of the trolley, lost motion connections between said movable means and said shifting means, a trolley traveling on said tracks adapted to engage said movable means and automatically insure the alinement of the free end of the switchpoint with the portion of track which the trolley is traversing by operation of said lost motion connections.

6. The combination with fixed suspended main and branch trackways, and a trolley traveling over said trackways, of an interconnecting switchpoint, shifting means pivoted to the branch trackways and connected with the free end of the switchpoint, movable means projecting into the path of the trolley, flexible lost motion connections between said movable means and said shifting means, a trolley traveling on said tracks adapted to engage and operate said shifting means through said movable means and lost motion connections.

7. The combination with an overhead main track and branch tracks, of a movable switchpoint for connecting the main track with either of the branch tracks, means po-

sitioned adjacent to the main track and one of the branch tracks, and a flexible lost motion connection between the free end of the switchpoint and said means.

8. In combination with suspended main and branch trackways, and a trolley traveling over said trackways, of a movable switchpoint for connecting the main track with either of the branch tracks, means projecting into the path of the trolley mounted adjacent to the branch tracks, manually operable shifting means, and lost motion connections between the free end of the switchpoint and said means.

9. In combination with suspended main and branch trackways, of an interconnecting switchpoint, automatic means and manual shifting means mounted adjacent to the tracks, and flexible lost motion connections between said switchpoint and said automatic and manual means respectively.

10. In combination with overhead main and branch trackways, of an interconnecting switchpoint having pivotal supporting engagement with the main track and shiftable rolling engagement with the branch tracks, means mounted adjacent to the tracks having lost motion connections with the free end of the switchpoint for operation by a trolley traveling over said tracks.

11. In combination with suspended main and branch trackways, of an interconnecting switchpoint having pivotal supporting engagement with the main track and sliding supporting engagement with the branch tracks whereby it may be shifted into alinement with either branch track, means mounted adjacent to the tracks, having a flexible lost motion connection with the free end of the switchpoint.

12. In combination with overhead main and branch trackways, an interconnecting switchpoint having pivotal supporting engagement with the main track and shiftable rolling engagement with the branch tracks whereby it may be alined with either branch track, means pivoted adjacent to the tracks and having a lost motion connection with the free end of the switchpoint, a trolley traveling over said tracks adapted to insure alinement of said switchpoint with the portion of track which said trolley is traversing through operation of said means.

13. The combination with overhead main and branch trackways, of an interconnecting switchpoint, means mounted adjacent to the tracks having a lost motion connection with the free end of the switchpoint, and means whereby the switchpoint may be manually shifted to either branch track as desired.

14. In combination with suspended main and branch trackways, of an interconnecting switchpoint therefor, means mounted adjacent the trackways, lost motion connecting means between said means and the free end of the switchpoint, a trolley traveling over said tracks, adapted to engage and operate said means and thereby move the switchpoint into alinement with the track which the trolley is traversing, and manually operable means for shifting the switchpoint into alinement with either branch as desired.

15. In combination with suspended main and branch trackways, of a movable switchpoint forming a continuation of the main track and adapted to aline with either of the branches, a trolley traveling on said tracks, means for automatically insuring continuous trackway in advance of the trolley, and manually operable means for selecting the branch to be traversed by the trolley.

In testimony whereof, I hereunto affix my signature.

ARTHUR S. REMSBERG.