

Jan. 26, 1926.

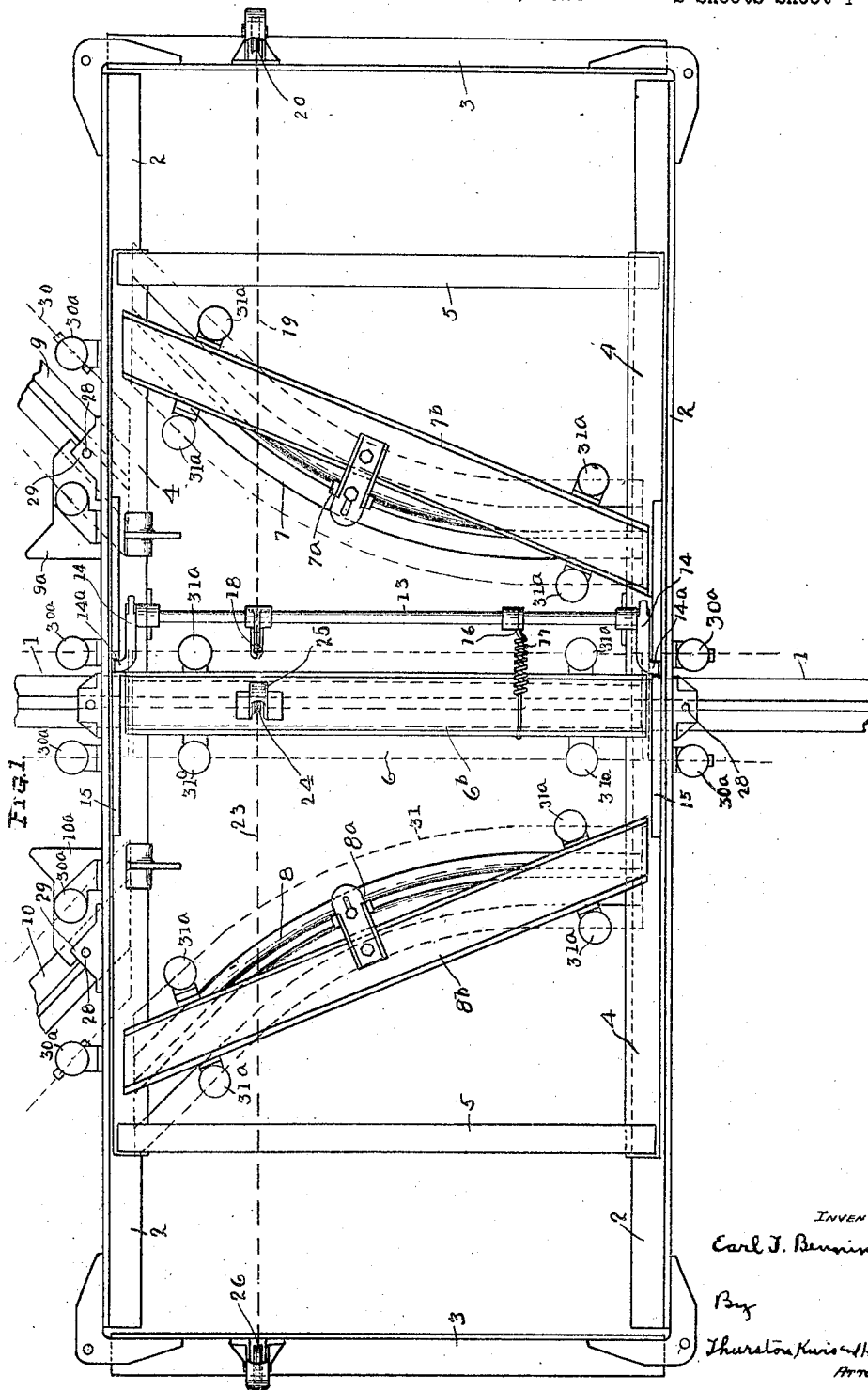
E. T. BENNINGTON

1,570,934

TRAMRAIL SWITCH

Filed Nov. 28, 1924

2 Sheets-Sheet 1



INVENTOR

Carl J. Bennington

By

Thurston, Kins & Hudson
ATTORNEYS.

Jan. 26 , 1926.

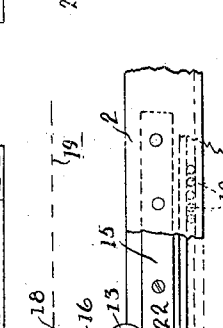
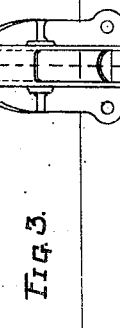
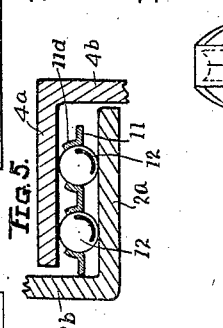
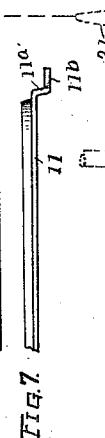
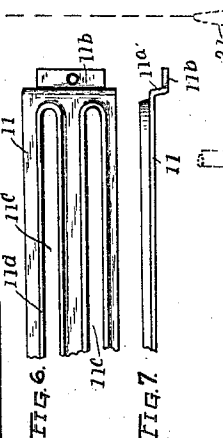
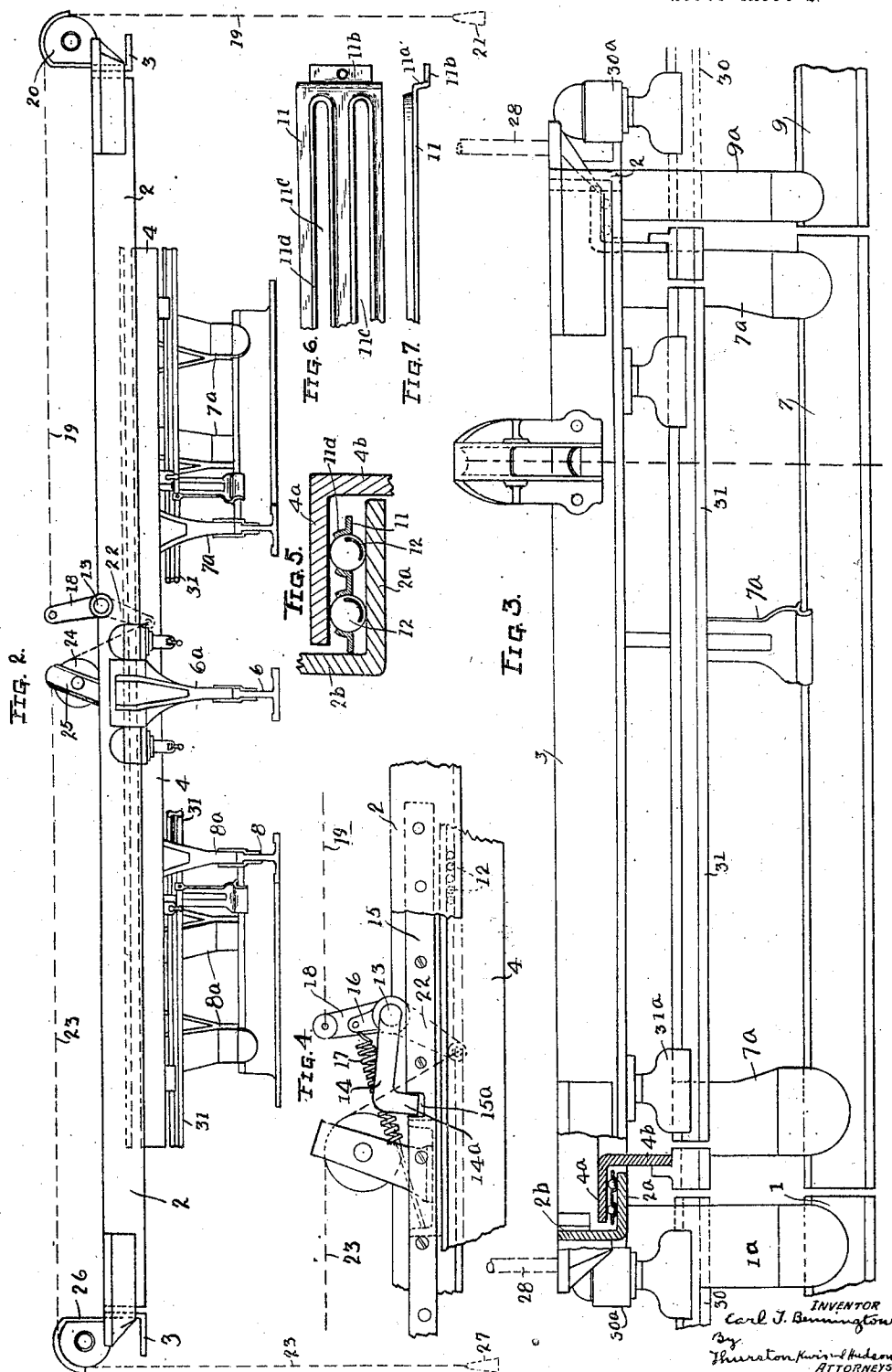
1,570,934

E. T. BENNINGTON

TRAMRAIL SWITCH

Filed Nov. 28, 1924

2 Sheets-Sheet 2.



INVENTOR
Carl J. Bennington
By
Thurston, Kwis & Hudson
ATTORNEYS.

UNITED STATES PATENT OFFICE.

EARL T. BENNINGTON, OF CLEVELAND HEIGHTS, OHIO, ASSIGNOR TO THE CLEVELAND CRANE & ENGINEERING COMPANY, OF WICKLIFFE, OHIO, A CORPORATION OF OHIO.

TRAMRAIL SWITCH.

Application filed November 28, 1924. Serial No. 752,686.

To all whom it may concern:

Be it known that I, EARL T. BENNINGTON, a citizen of the United States, residing at Cleveland Heights, in the county of Cuyahoga and State of Ohio, have invented a certain new and useful Improvement in Tramrail Switches, of which the following is a full, clear, and exact description.

This invention relates to tramrail switches and more particularly to switches for overhead carrier tracks of the type in which a transversely movable frame carries track sections adapted to connect fixed parts of the main track or to connect the main track to an auxiliary track.

It is an object of the present invention to provide simple and efficient means for locking the switch in adjusted position and for shifting the same from one position of adjustment to another. More particularly the present invention aims to provide means for shifting the switch to different positions of adjustment, together with locking means which is automatically released upon actuation of the shifting means and automatically moved to locking position upon release of the shifting means.

A further object is to provide an improved mounting for the movable switch member.

With the above and other objects in view, the invention may be said to comprise the device as illustrated in the accompanying drawing hereinafter described and particularly set forth in the appended claims, together with such variations and modifications thereof as will be apparent to one skilled in the art to which the invention appertains.

Reference should be had to the accompanying drawings forming a part of this specification in which Fig. 1 is a top plan view of the switch; Fig. 2 is a side elevation of the switch; Fig. 3 is an end elevation of the switch with a portion broken away at one side thereof to show the side bars of the supporting frame and of the movable frame in section; Fig. 4 is a detailed view showing the latch in elevation; Fig. 5 is a fragmentary section showing the ball bearing support; Fig. 6 is a fragmentary top plan view of the ball spacer; Fig. 7 is a side elevation of the spacer.

Referring to the accompanying drawings, the subject matter of the present invention

comprises a switch member which is mounted for transverse movement between fixed sections 1 of a main track and which is supported for movement transversely of the main track upon a fixed rectangular frame which has longitudinal side bars 2 extending at right angles to the fixed section 1 and forming supporting rails for the switch member and end bars 3 which are connected across the ends of the side bars 2 and form stops for limiting the movement of the switch member in either direction. The side bars 2 of the supporting frame are angle bars so disposed that one flange 2^a thereof extends horizontally and inwardly from the other vertical flange 2^b thereof. The movable switch member is supported for sliding movement longitudinally of the supporting frame and comprises a rectangular frame having side bars 4 which have horizontal flanges 4^a extending outwardly and overlying the flanges 2^a of the side bars 2 of the supporting frame and downwardly extending vertical flanges 4^b which are within the inner ends of the flanges 2^a of the supporting bar 2. The side bars 4 of the switch frame are connected by end bars 5 and the switch frame carries a straight rail section 6 which is suspended by hangers 6^a from a channel cross bar 6^b connecting the side bars 4 of the switch frame intermediate the ends thereof. The rail section 6 is so supported that it is adapted to be aligned with the fixed section 1 of the main track to close the gap between said fixed sections. The switch frame in addition to the straight rail section 6 carries one or more additional rail sections which are adapted to be brought into alignment with one of the fixed sections 1 of the main track and to connect the main track with one or more auxiliary tracks. As shown herein the movable switch frame carries two curved rail sections 7 and 8 which extend across the frame on opposite sides of the straight rail sections 6 and are adapted to be placed in alignment with one of the fixed sections 1 of the main track and with auxiliary tracks 9 and 10 upon the opposite sides of the supporting frame, the curved track sections 7 and 8 being supported by hangers 7^a and 8^a depending from diagonally disposed channel cross bars 7^b and 8^b which extend across the switch frame upon opposite sides of the channel bar 6^b.

The supporting frame is of such length and the track sections 6, 7 and 8 are so disposed upon the switch frame that when the switch frame is disposed centrally of the supporting frame, carriers can travel across the switch from one fixed section of the main track to the other, and when the switch frame engages one end bar 3 of the supporting frame, the curved track section 7 connects the main track with the auxiliary track 9 and when in engagement with the cross rail at the opposite end of the supporting frame, the curved track section 8 connects the main track with the auxiliary track 10.

To facilitate the movement of the switch frame on the supporting frame, ball bearings are disposed between the superposed horizontal flanges 2^a and 4^a. For retaining the balls in proper position elongated spacer plates 11 are provided which have downturned end portions 11^a and horizontal flanges 11^b projecting outwardly from the downturned portions 11^a and adapted to be secured to the flanges 2^a of the supporting rails. Each of the supporting plates 11 has parallel longitudinal slots 11^c, the edges of the slots being provided with upwardly and inwardly inclined flanges 11^d. The body portions of the plates 11 are supported above the flange 2^a and rows of balls 12 are positioned in the slots 11^c, the balls 12 being retained in the slots between the inwardly inclined flanges 11^d and the top surface of the flange 2^a. The horizontal flanges 2^a of the side bars of the switch frame rest upon the balls 12 which rotate as the switch frame is moved longitudinally of the supporting frame thus practically eliminating frictional resistance to movement of the switch frame.

At one side of the central cross bar 6^b of the switch frame there is mounted a rock shaft 13 which is journaled in bearings secured to the opposite side bars 2 and has attached to opposite ends thereof latch arms 14 provided with outer end portions bent outwardly and downwardly to engage with latch plates 15 secured to the vertical flanges 2^b of the supporting bars. The latch plates 15 are provided intermediate the ends thereof with a notch 15^a formed to receive the ends 14^a of the latch bar and so positioned that when the latch bars 14^a are engaged in the notches 15^a the switch frame is held in a position in which the rail section 6 is aligned with the fixed main track section 1. The latch plates 15 are of such length that when the switch frame is at its limit of movement in engagement with an end bar 3, the downturned end 14^a of the latch bar may be dropped into engagement with one end or the other of the plate to lock the switch frame in such positions, one of the extreme positions of the switch frame being such as to align the track section 7 with the

main track 1 and the auxiliary track 9 and the other extreme position being such as to align the track section 8 with the main track 1 and the auxiliary track 10. The rock shaft 13 has a short arm 16 fixed thereto and extending upwardly therefrom to which is attached one end of a coil spring 17, the opposite end of which is anchored to the cross bar 6^b, the spring 17 acting to turn the shaft 13 in a direction to move the latch arms 14 toward engaging position. The rock shaft 13 has a second upwardly extending arm 18 to the upper end of which is attached a pull cable 19 preferably a chain which extends from the arm 18 in a direction opposite that toward which the arm 18 is actuated by the spring 17, the cable 19 passing over a sheave 20 on the cross bar 3 and depending from the sheave, the lower end of the pull cable being preferably provided with a handle 21 to facilitate manual operation. An arm 22 is fixed to the shaft 13 and extends downwardly therefrom opposite the arm 18 and to the lower end of this arm is attached a pull cable 23 similar to the cable 19 and extending in the opposite direction therefrom. The pull cable 23 extends upwardly from the arm 22 over a guide sheave 24 carried by an arm 25 extending upwardly from the central cross bar 6^b, thence longitudinally of the frame and over a guide sheave 26 attached to the cross bar 3 at the end opposite that upon which the guide sheave 20 is mounted, the cable 23 depending from the sheave 26 and having a handle 27 at its lower end.

When a pull is exerted upon either the cable 19 or the cable 23 the shaft 13 will be rocked in a direction to lift the latch arms 14 and free the switch frame from the supporting frame and continued pull upon the cable will cause the switch frame to move longitudinally of the supporting frame. Thus the pull cables serve not only to shift the switch frame but also to release the latch which holds the frame in its various positions of adjustment. Whenever the switch frame has been shifted to a desired position of adjustment, the latches will be moved to locking position by the spring 17 immediately upon release of the pull cable.

The switch above described is particularly applicable to track systems for overhead carriers and the supporting frame may be suspended in fixed position by means of suspension rods 28 attached at their lower ends to brackets 29 attached to the side rails 2 of the supporting frame. The fixed sections of the main and auxiliary track may have associated therewith conductor rails 30 for supplying current to the motors of carriers suspended from the tracks, the conductor rails being supported at the ends thereof terminating at opposite sides of the supporting frame by hangers 30^a attached to the side bars 2, the ends of the fixed tracks 1, 9 and

10 being supported from the side bars 2 by means of hangers 1^a, 9^a and 10^a respectively. When the conductor rails are employed in connection with the track rails the track sections 6, 7 and 8 have conductor rail sections 31 associated therewith which are adapted to align and make contact with the conductor rails 30 of the fixed tracks, the rail sections 31 being suspended from the channel cross bars 6^b, 7^b and 8^b by means of hangers 31^a.

Having described my invention, I claim—

1. A tramrail switch comprising a frame which is fixed with respect to the main track, a movable frame having a track section thereon and slidably mounted on the fixed frame, a latch carried by the movable frame and engageable with a part of the fixed frame, to secure the movable frame in a given position, and oppositely extending pull cables for shifting said movable frame, each of said pull cables being connected to said latch to release the same when a pull is exerted on the cable.

2. A tramrail switch comprising fixed frame, a main track terminating at one side of the frame, a plurality of tracks terminating at spaced points on the opposite side of the frame, a frame movably mounted on the fixed frame, a plurality of track sections carried by the movable frame, each adapted to connect the main track and one of said tracks at the opposite side of the fixed frame, a latch carried by the movable frame, means on the fixed frame with which the latch is adapted to engage to lock the movable frame in positions in which any one of the rail sections is aligned with the main track, and pull cables extending in opposite directions and each connected to the latch to move the same to releasing position when a pull is exerted thereon.

3. A tramrail switch comprising a main track having a gap therein and an auxiliary track at one side of the fixed track at one side of the gap, a fixed support, a transversely movable frame on said support, a track section on said movable frame adapted to bridge the gap in the main track, a track section on said movable frame adapted to connect the main track and the auxiliary track, a latch on the movable frame engageable with different parts of the support to lock the said frame in different positions on the support, a spring for holding the latch in locking position, oppositely extending pull cables so connected to the latch that

the latch is released by a pull on either cable.

4. A tramrail switch comprising a supporting frame, a track carrying frame movably mounted in the supporting frame, a rock shaft on said movable frame, a latch member carried by the shaft and engageable with the supporting frame, a spring connected to the shaft for normally holding the latch in engaging position, an arm on the shaft, and a pull cable connected to said arm to turn the same in opposition to the spring.

5. A tramrail switch comprising a supporting frame, a track carrying frame movably mounted on the supporting frame, a rock shaft on the movable frame, a latch carried by the shaft and engageable with the supporting frame at spaced points to lock the movable frame in different positions thereon, a spring connected to the shaft for normally holding the latch in engaging position, oppositely extending arms fixed to the shaft, and pull cables connected to said arms and extending therefrom in directions such that pull on either cable will rock the shaft to release the latch.

6. A tramrail switch comprising a supporting frame having longitudinal side bars with inwardly extending flanges, a track carrying frame having side bars with outwardly extending flanges overlying the flanges of the supporting frame and rows of bearing balls interposed between the superposed flanges.

7. A tramrail switch comprising a supporting frame having longitudinal side bars with inwardly extending flanges, elongated spacers secured upon the upper faces of the said flanges and having spaced longitudinally extending slots, rows of balls in said slots, and a track carrying frame having side bars resting on said balls.

8. A tramrail switch comprising a supporting frame having parallel angle iron side bars which have horizontal supporting flanges, a track carrying frame mounted to travel along the supporting frame and having angle iron side bars, provided with outwardly projecting horizontal flanges overlying the flanges of the side bars of the supporting frame, and rows of bearing balls interposed between the superposed flanges of the side bars of the supporting and track carrying frames.

In testimony whereof, I hereunto affix my signature.

EARL T. BENNINGTON.