

No. 777,050.

PATENTED DEC. 6, 1904.

W. R. THURSTON.
TRACK AND SWITCH SYSTEM.

APPLICATION FILED APR. 27, 1904.

NO MODEL.

2 SHEETS—SHEET 1.

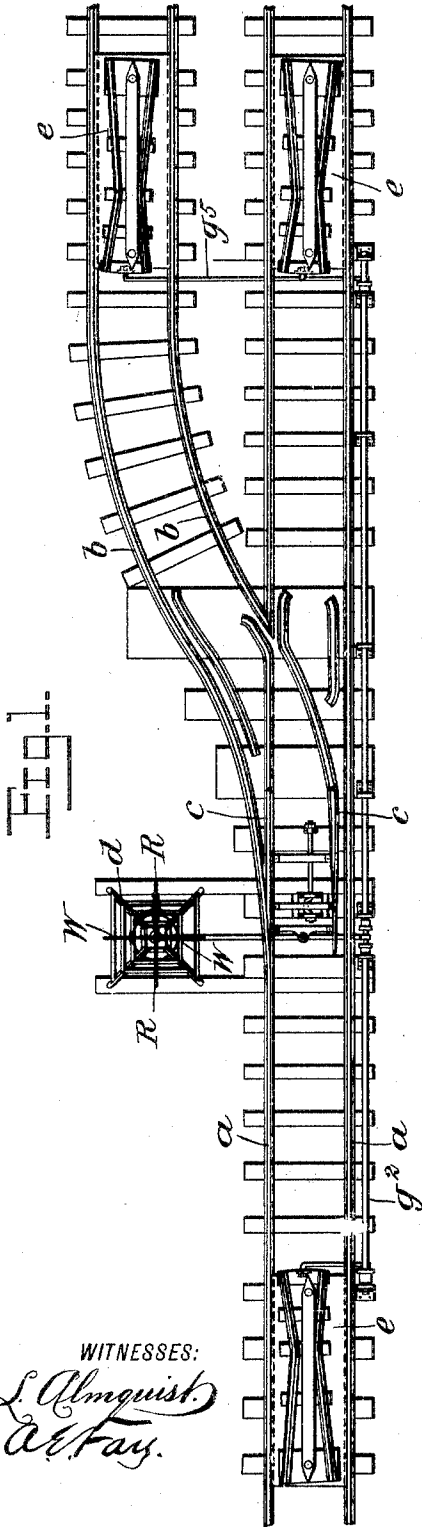


Fig. 1.

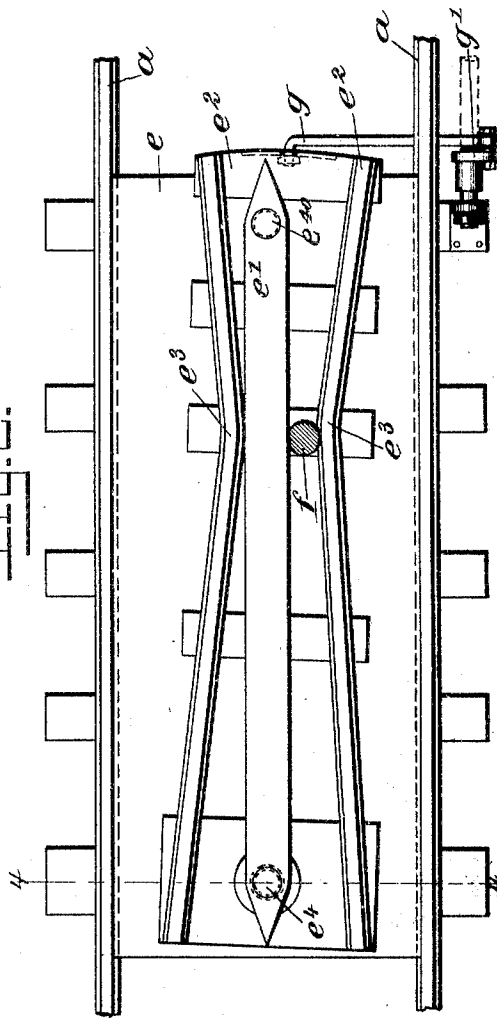


Fig. 2.

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2 SHEETS—SHEET 2.

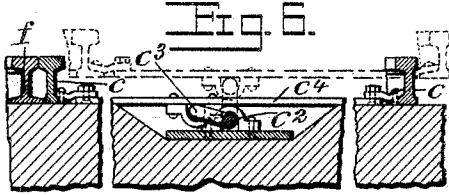


Fig. 6.

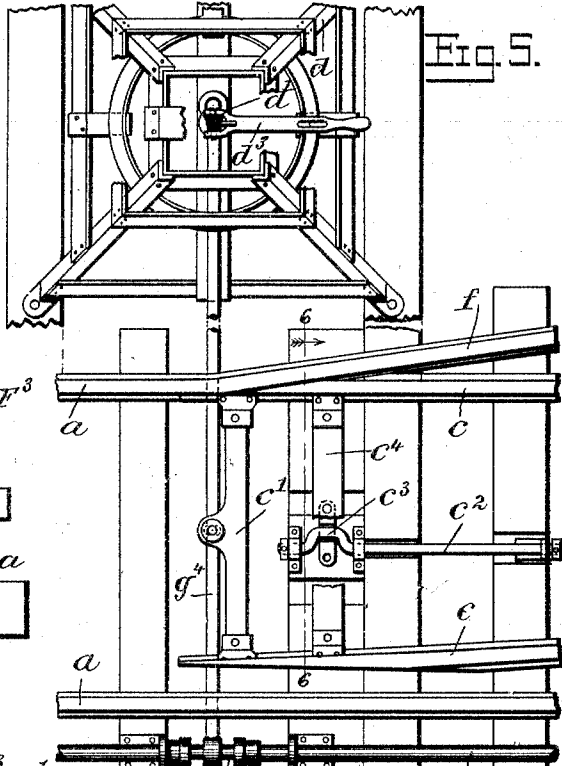


Fig. 5.

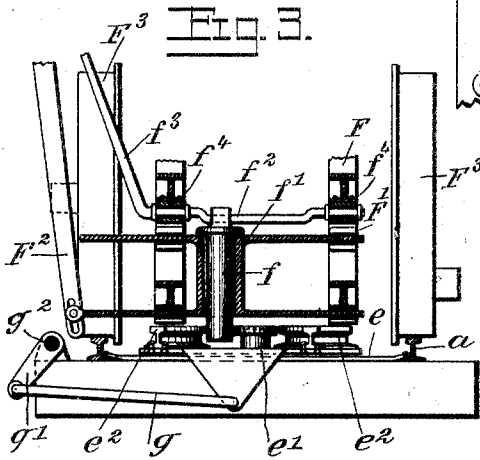


Fig. 3.

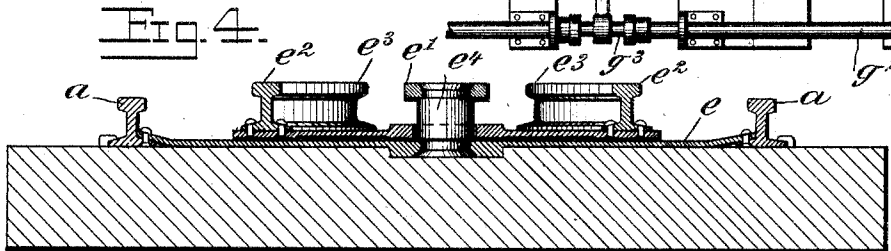


Fig. 4.

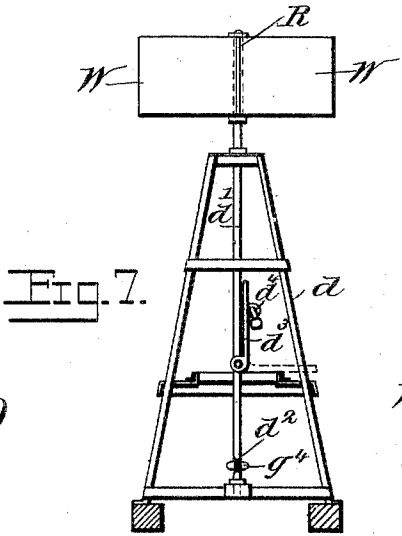


Fig. 7.

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UNITED STATES PATENT OFFICE.

WILLIAM REYNOLDS THURSTON, OF JACKSONVILLE, FLORIDA.

TRACK AND SWITCH SYSTEM.

SPECIFICATION forming part of Letters Patent No. 777,050, dated December 6, 1904.

Application filed April 27, 1904. Serial No. 205,080. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM REYNOLDS THURSTON, a citizen of the United States, and a resident of Jacksonville, in the county of Duval and State of Florida, have invented a new and Improved Track and Switch System, of which the following is a full, clear, and exact description.

My invention relates to a track and switch system constituting a safety device for use in connection with fast trains.

The object of the invention is to provide an automatic switching device which will be operated by the movement of a train to close all switches to side tracks and keep the main track open.

A further object of the invention is to provide a switch which can be automatically operated by a part of a moving train to turn the switches in any desired manner upon the approach of a train.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a plan view of a portion of a railway, showing a preferred form of my invention applied thereto. Fig. 2 is an enlarged detail view of the switch-operating mechanism and track. Fig. 3 is a sectional view of a portion of an engine or car with a switch-operating pin thereon and also showing a portion of the track. Fig. 4 is a sectional view on the line 4 4 of Fig. 2. Fig. 5 is a view of the switch and part of its operating mechanism. Fig. 6 is a sectional view on the line 6 6 of Fig. 5, and Fig. 7 is a side view of a switch and signal device.

In the drawings, *a a* represent the main tracks and *b b* a siding. *c* is a switching-track between the two, which is intended to be operated in such a manner as to control the direction of motion of a train on any of the tracks, and *d* is a signal-frame provided with a vertical rod *d'*, to which is applied a signal, here represented by two vanes R and W, which are designed to be painted red and white, respectively.

*d*² is an offset in the rod *d'*.

*d*³ is a lever, and *d*⁴ a locking device therefor.

e is a plate which constitutes the base of the switch-operating mechanism, and one of these plates is located on the siding and two on the main track equally distant from the switch and upon opposite sides of it. Preferably one of those on the main track is directly opposite to the one on the siding, so that they can be connected together.

The switch-operating device comprises a stationary bar *e'* and a pivoted frame *e*², provided with two bars *e*³, which are preferably bent in the manner indicated in Fig. 2, so as to permit the operating-pin *f* to readily slide into the space between the end of the bar *e'* and the end of one of the bars *e*³. The frame *e*² is pivoted at the point *e*⁴ to the base-plate *e*, and the bar *e'* is fixedly secured to the plate *e* at the points *e*⁴ and *e*¹⁰. Attached to the swinging end of the frame *e*² is a rod *g*, which is pivoted to a crank *g'*, attached to a rod *g*², extending lengthwise of the track. This rod is in turn provided with a crank *g*³, to which is pivotally attached another rod, *g*⁴. The rod *g*⁴ is attached to the offset portion *d*² of the rod *d'* and is also attached to a frame *e'*, which forms a part of the switch *c*. The switch also comprises a longitudinal rod *c*², with an offset portion *c*³ attached to a bar *c*⁴, extending transversely of the switch.

It will be seen from this description that when the pin *f* enters the space between the bars *e'* and *e*³, as shown in Fig. 2, the frame *e*² will be forced to swing on its pivot toward the side upon which the pin *f* is located. This will cause the oscillation of the rods *g*² through the connections described, which will in turn cause the reciprocation of the bar *g*⁴, the turning of the signal W R, and the turning of the switch *c*. It will be obvious that this operation will be caused no matter which one of the switching devices *e* is operated upon and that the movement of one of them will cause a simultaneous movement of all on account of the longitudinal rod *g*² and the connecting-rod *g*⁵. Thus supposing that the pin *f* is always on the same side of the train it will upon reaching any of the switching devices *e* turn them, for example, into the position shown in Fig. 1, which will provide for a clear track by cutting off the siding *b*. It will also set

the signal so that the white portion thereof will be in view of the engineer. If a train moves onto the siding, it will cause the same operation to take place, and therefore leave a clear track for the fast trains on the main track.

This system is especially designed for providing for a clear track for fast trains; but slow trains may be provided with pins f , and they will of course be provided with means for operating such pins in such a manner as to permit them to go upon sidings when desired. In fact, all trains would preferably be provided with means for moving the pins from one side of the bar e' to the other, so that the trains could be reversed and so that they could be placed upon sidings. Although this feature forms a separate part of my invention, I have illustrated a convenient form of it in Fig. 3. In this figure f' indicates a guide for the pin f , and f'' is a rod having an offset portion passing through an eye in said pin and journaled in the bearings f^4 on the frame F. f^3 is a lever for operating the rod or shaft f'' to raise and lower the pin f . Upon the frame F are also guides F' for the guide-frame f' . This frame is designed to be reciprocated transversely of the tracks for the purpose of putting the pin to either side of the bar e' . F² indicates a lever for performing this operation. The wheels of the train are indicated by F³.

It will be obvious that many modifications may be made in the apparatus as shown by the drawings without departing from the spirit of my invention, for the drawings merely indicate the nature of the invention and show one form in which it may be embodied. One other manner in which I have contemplated applying my invention is to have the switching device connected with the switch in such a manner as to close it whenever the device is in the center of the track and to have it open the switch whenever the device is thrown to either side. The reverse of this construction could also be employed.

The principle of my invention is to be used, preferably, to perfect a main-line connection for fast trains, so as to insure the perfect safety thereof. In the last modification that I have mentioned a single central plunger could be employed at the bottom of an engine, which plunger should normally be down in position to operate the switches, but could be withdrawn upward out of operative position when desired. Two pins could also be used, one on each side, and operated so that when one was down the other would necessarily be up, and therefore one of them would always be in operative position. When desired to operate for slower trains, the diverging bars e' would be placed at different distances from the switch, and when applied to trains moving at very high rates of speed—as high, for example, as one hundred miles an hour—the di-

verging bars would have to be lengthened, so as to make the movements more gradual with respect to the speed of the train and prevent the too sudden operation of the switch.

One device can be placed on the engine and another one at any point on the rear of the train, or a single one can be placed on the rear of the train to operate the switches after the train has passed. It can be applied to both steam and electric railways and, in fact, to any kind of a railway whatever. It can advantageously be employed for placing the "monkey" or single-rail switch which is used on side tracks to prevent cars from running onto the main line. It can be placed in such a manner as to insure a continuous track when the switch is moved to allow a train to pass onto the siding.

Proper allowance for expansion and contraction should be made in the construction of the device.

I desire to emphasize the use of the angle-plates and bars for operating the switch device, together with the shaft or rod alongside the track. It will readily be perceived that this may become important, as the strain on the shaft may cause sufficient vibration to result in lost motion at the opposite end, and therefore fail to accomplish the object for which it is designed. It is obvious that this could not occur with the angle-plates and connecting-bars, as the strain in that case would be a direct strain on the longitudinal fibers of the bar.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A track and switch system, comprising a main track, a siding, a switch, three pivoted frames for throwing the switch, one of said frames being located on the siding and two on the main track, a signal and connections from the switch to the signal.

2. A safety device for railway-tracks, comprising a main track, a siding, a switch, and means for throwing the switch comprising a pivoted frame and located at a distance from the switch, a bar thereon and a stationary bar.

3. A safety device for railway-tracks, comprising a main track, a siding, a switch, three pivoted frames for throwing the switch, each located at a distance from the switch, one being located on the siding and two on the main track, each frame having a pair of bars secured thereto, and a stationary bar located between each pair of bars upon the several pivoted frames.

4. A safety device for railways, comprising a main track, a siding, a switch, three pivoted frames for throwing the switch, each located at a distance therefrom, one being upon the siding and two upon the main track, each pivoted frame being provided with a bar, a stationary bar being located in proximity to each of the bars upon the pivoted frames, connections from each of the pivoted frames to the

switch and to each other, comprising a rod extending from each frame, a rotatable rod connected to each of said first-mentioned rods, and a third rod connecting said rotatable rod with the switch.

5 5. A safety device for railways, comprising a pivoted frame, a bar thereon, a stationary bar, a switch, and connections from said pivoted frame to the switch, comprising a rod
10 pivoted to the frame, a rotatable rod, a link connecting said first-named rod to said rotatable rod, a third rod connected to the switch, and a link connecting said rotatable rod to
said third rod.

15 6. A switch-operating device, comprising a stationary bar secured to the road-bed at two points, and a frame having two bars fixed thereto, one located on each side of the stationary bar, said frame being pivoted at one
20 of the points at which the stationary bar is secured.

7. A switch-operating device comprising a

stationary bar, and a pivoted bar, said pivoted bar having ends diverging from said stationary bar.

25 8. The combination of a railway system, a switch, means for throwing the switch having a stationary bar and a pivoted frame, and means for moving the pivoted frame comprising a pin and means for moving the pin laterally and vertically.

9. The combination of a railway system, a switch, automatic means for moving the switch, and a locking device for the switch comprising an oscillatable rod and a crank
35 placed under the switch-bars to hold them in close contact with the track.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM REYNOLDS THURSTON.

Witnesses:

T. H. LIVINGSTON,
F. S. HODGES.