T. M. FREEBLE.

SWITCH LOCKING MECHANISM.

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1,042,103.

Patented Oct. 22, 1912.

Fig. 1.

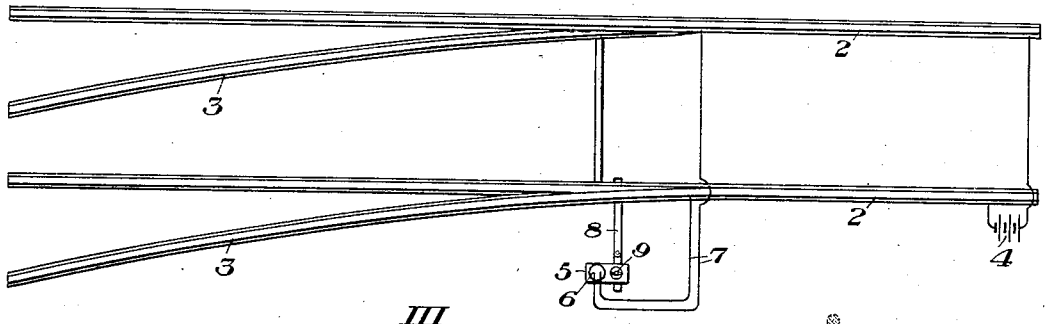


Fig. 2.

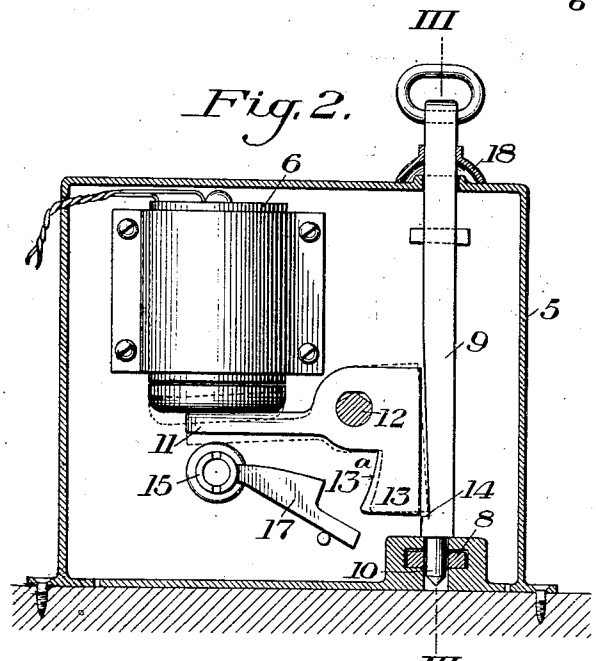


Fig. 3.

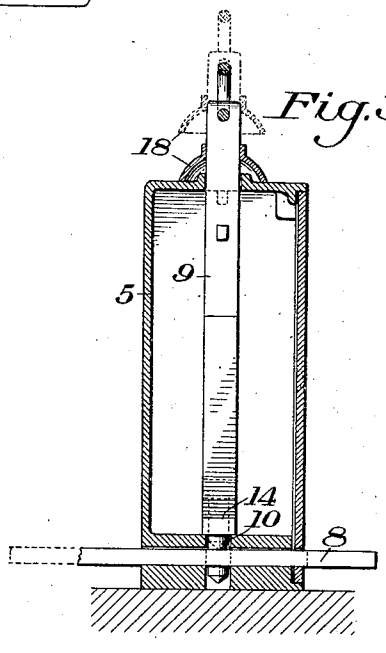


Fig. 4.

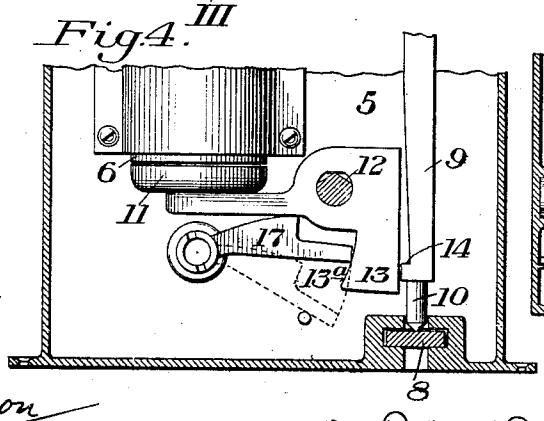


Fig. 5.

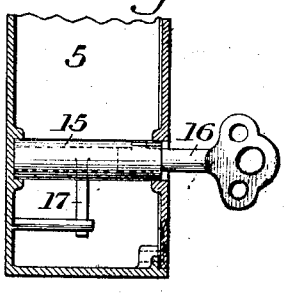
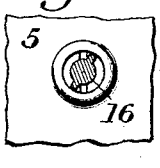


Fig. 6.



WITNESSES

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UNITED STATES PATENT OFFICE.

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SWITCH-LOCKING MECHANISM.

1,042,103. Specification of Letters Patent. Patented Oct. 22, 1912.

Application filed October 12, 1910. Serial No. 586,649.

To all whom it may concern:

Be it known that I, THOMAS M. FREEBLE, of Rochester, Beaver county, Pennsylvania, have invented a new and useful Improvement in Switch-Locking Mechanism, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which:—

Figure 1 is a plan view showing my invention applied; Fig. 2 is a sectional elevation of the locking box or case and its contained mechanism; Fig. 3 is a section on the line III—III of Fig. 2; Fig. 4 is a detail view of a portion of the mechanism shown in Fig. 2, but in the unlocked position; Figs. 5 and 6 are detail views showing the key parts of the mechanism.

My invention has relation to switch-locking mechanism, and is designed to provide simple and efficient means whereby a switch cannot be thrown when a train is within a certain distance thereof, except by an authorized person with full knowledge of that fact. It is also designed to provide mechanism of this character, in which the switch when locked cannot be unlocked except by the use of a special key, and which key cannot be removed until the switch is restored to its normal position.

The nature of my invention will be best understood by reference to the accompanying drawings, in which I have shown the preferred embodiment thereof, and which will now be described, it being premised, however, that various changes may be made in the details of construction and arrangement of the parts, without departing from the spirit and scope of my invention as defined in the appended claims.

In the accompanying drawings, the numeral 2 designates main track rails, and 3 branch track rails which connect with the main track, the switch connection shown being of the usual split switch type.

4 designates a battery or other source of electric energy, which is connected across the main rails 2 at a certain determined distance from the switch.

5 is a box or casing containing the locking mechanism, and which is preferably placed closely adjacent to the usual switch stand (not shown). Within this box is an electro-magnet 6, which is connected across the rails 2 adjacent to the switch by means of the suitable conductors 7.

8 is the usual switch bar or rod which extends through the lower portion of the box 5, and is held against switch-throwing movement by means of a vertical locking bar 9, whose lower end portion 10 passes through a perforation in said rod or bar.

11 is the armature of the electro-magnet, which is pivoted at 12 and which has a heel portion 13 which normally engages a locking shoulder 14 on the locking member 9.

15 designates a key tumbler or barrel adapted to receive a removable key 16 and having an arm 17 arranged to engage the heel portion 13 of the armature 11.

18 is a cap or cover, which is provided for the purpose of closing the opening in the top of the box or case through which the locking member 9 extends, against the entrance of water, etc.

The operation is as follows:—As long as no train occupies that portion of the main track between the battery 4 and the conductor 7 leading to the electromagnet 6, said magnet is energized and its armature 12 is held in the position shown in Fig. 2 and out of locking engagement with the shoulder of the locking member 9. The switch can, therefore, be thrown by lifting the locking member 9 out of engagement with the switch rod or bar 8. When, however, a train enters the section between the battery and the connection 7, the electro magnet 6 will be short-circuited or shunted by the wheels or axles of the train and will be deënergized to cause it to release the armature 11, whose heel portion will then drop into engagement with the locking shoulder of the member 9. Said member cannot now be raised except by the use of the key 16. This key, which is supposed to be only in the possession of an authorized employee of the road, is inserted in the tumbler or barrel 15, and is caused to turn said tumbler or barrel to raise the arm 17 into lifting engagement with the armature 12, thereby moving said armature to release it from locking engagement with the member 9. The heel portion 13 of the armature 12 has a cam surface 13ª for engagement with the end of the arm 17, so that when it is moved into the position shown in Fig. 4, and the locking member 9 has been raised,

the arm 17 cannot be moved back to the dotted-line position shown, and the key is thereby held against withdrawal, as shown in Fig. 6, until such time as the switch has been again locked by the engagement of the member 9 with the rod 8.

The advantages of my invention will be apparent to those skilled in the art, since it provides means which make it impossible for a switch to be thrown by any unauthorized person with a train within a definite distance of the switch. It also provides means whereby the person using the key is compelled to leave the switch in the proper position before he can regain possession of his key.

What I claim is:—

1. In a switch-locking mechanism for railway tracks, the combination with a movable track switch member and a throwing rod therefor, of a vertically movable locking bar for the throwing rod, an armature member arranged in one position thereof to engage and lock the locking bar, a magnet for controlling the armature, a track circuit including the magnet, and a key-operated member positioned when moved to engage the armature member and move it out of locking engagement with the locking bar, substantially as described.

2. In a switch-locking mechanism for railway tracks, the combination with a movable switch member and a throwing connection therefor, of a locking member to engage and lock the throwing connection against movement, a lock for said locking member, electro-magnetic means for controlling the lock, a track circuit for controlling the electromagnetic means, and a removable key adapted to operate and release the said lock, together with means whereby the key is locked against withdrawal in one position of the switch member; substantially as described.

3. In switch-locking mechanism for railway tracks, the combination with a movable switch member and a throwing connection therefor, of a locking member to engage and lock the throwing connection against movement, a lock for said locking member, electro-magnetic means for controlling the lock, a track circuit for controlling the electromagnetic means, and a removable key adapted to operate and release the said lock, the lock having means for locking the key against removal in one position of the parts; substantially as described.

4. In switch-locking mechanism for railways, the combination with a movable track switch member and a throwing rod therefor, of a vertically movable locking bar for the throwing rod, an armature member arranged, in one position thereof, to engage and lock the locking bar, a magnet for controlling the armature, a track circuit including said magnet, and a key-operated member for moving the armature member independently of the magnet, the armature member having means to engage and lock the key-operated member in one position of the parts; substantially as described.

5. In a switch locking mechanism, a switch having a throwing rod or bar, a locking member arranged to have a locking engagement therein, an electro-magnet having an armature arranged to lock the locking member when the magnet is deënergized, and a track circuit controlling the magnet, a key-operated release device for the armature, together with means whereby the key can be withdrawn from said device only when the locking member has been returned to its locking position; substantially as described.

In testimony whereof, I have hereunto set my hand.

THOMAS M. FREEBLE.

Witnesses:
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GEO. H. PARMELEE.