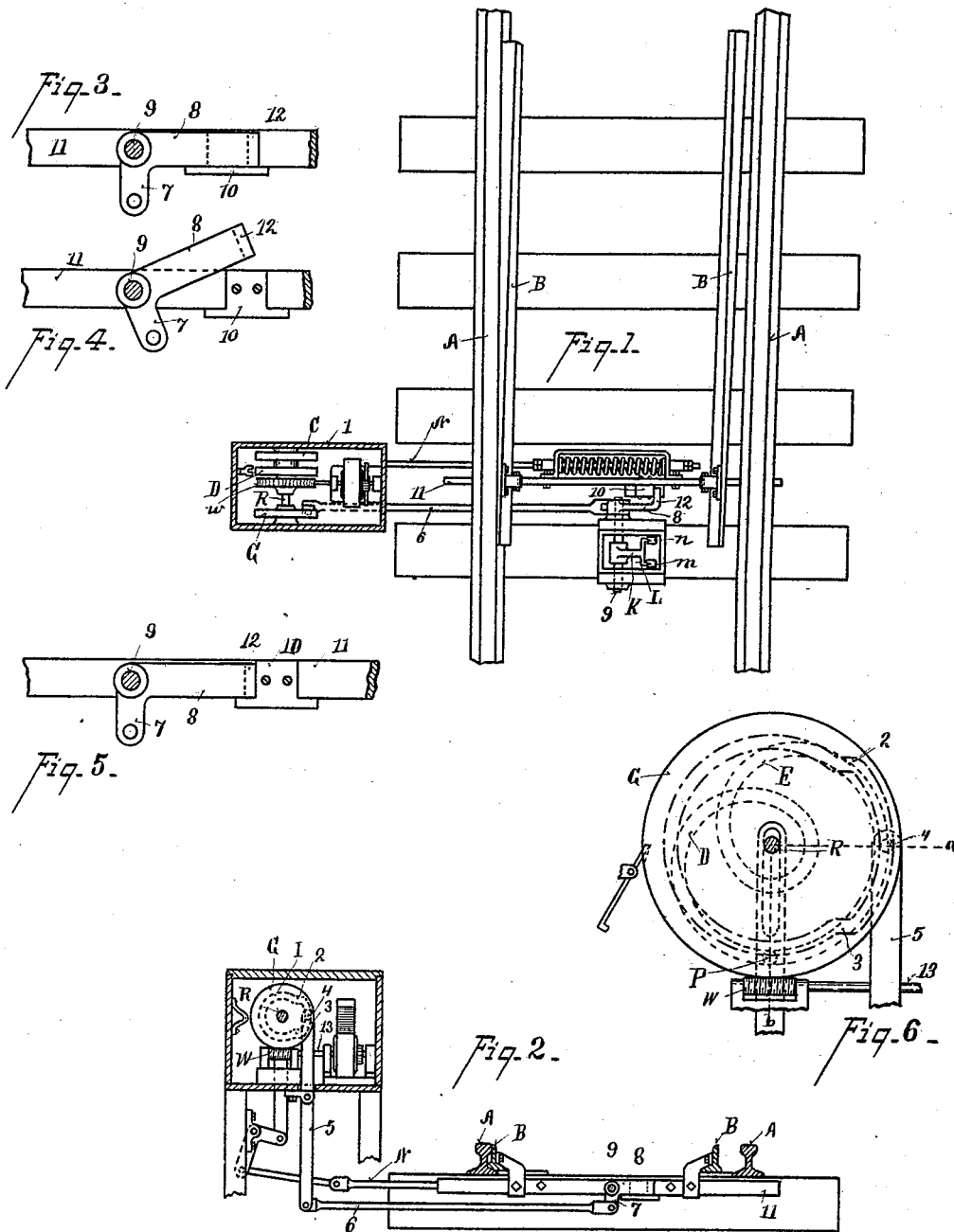


(No Model.)

F. C. WEIR & E. W. HARDEN.
ELECTRICAL SWITCH LOCK.

No. 494,451.

Patented Mar. 28, 1893.



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UNITED STATES PATENT OFFICE.

FREDERIC C. WEIR AND EDWARD W. HARDEN, OF CINCINNATI, OHIO; SAID
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ELECTRICAL SWITCH-LOCK.

SPECIFICATION forming part of Letters Patent No. 494,451, dated March 28, 1893.

Application filed December 20, 1892. Serial No. 455,811. (No model.)

To all whom it may concern:

Be it known that we, FREDERIC C. WEIR and EDWARD W. HARDEN, citizens of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Electrical Switch-Locks, of which the following is a specification.

The object of our invention is to provide a locking device for a railway switch, being an attachment to the device shown and described in Letters Patent No. 440,502, granted Joseph Ramsey, Jr., and F. C. Weir, November 11, 1890.

The various features of our invention are fully set forth in the description of the accompanying drawings making a part of this specification, in which—

Figure 1 is a plan view of our improvement in position for use. Fig. 2 is a sectional elevation of the locking mechanism. Fig. 3 is a detail view of the locking mechanism in one position, and Fig. 4 is a similar detail view showing the locking mechanism thrown out of engagement. Fig. 5 is a detail showing the switch locked in the position opposite to that shown in Fig. 3. Fig. 6 is a diagram of the switch moving mechanism.

A, A, represent fixed rails; B, B, the movable point rails.

1 represents the switch motor box in which are mounted the following parts: 13 represents a motor shaft, W a worm, and w a worm wheel on shaft R. C, D, represent disks; disk C is provided with a cam groove E, and disk D with a cam groove F. P represents a stud pin traveling in said grooves operating the connecting rod N of the switch bar. These parts are constructed so that the switch is thrown alternately in either direction by the full revolution of the disks C, D, as fully described in said Patent No. 440,502.

Our improvement is attached to this switch throwing mechanism and it consists of the cam disk G attached to the shaft R and operating a connecting rod H.

I represents the cam groove in the disk which has two working portions 2, 3.

4 represents a crank pin traveling in said groove; 5 a lever joined to the connecting

rod 6 which is in turn hinged to the crank arm 7, journaled upon the shaft 9.

8 represents the opposite end of the crank arm.

10 represents a plate or lug secured to the switch bar 11. Arm 8 is provided with a hook 12 shown in dotted lines, Figs. 3, 4, 5, and full lines Fig. 1, which engages with the edge of plate 10 in the position shown in Figs. 1 and 3, when the switch is locked in one position; when it is unlocked it is in the position shown in Fig. 4. When it is locked in the opposite position the hook falls behind the plate 10, as shown in Fig. 5. It is necessary, therefore, to lift the hook or locking arm 8 up before the switch can be thrown in either direction. In the switch moving mechanism the disks C, D, have an idle portion between the points a, b. The cam G is fixed to the shaft 13 in such a position that the inclines 2, 3, do their work between the points a, b, or when the switch throwing mechanism is idle. The crank pin 4 stands normally in the position shown in Figs. 2 and 6. As the shaft 13 is set in revolution the crank pin 4 will pass through the inclines 3 while the switch moving mechanism is moved idle; this reciprocates the connecting rod 6, and throws the locking arm 8 up in the position shown in Fig. 4; it is idle in this position until the cam pin has reached the incline 2, by this time the switch moving mechanism has performed its work, and the crank pin passing through the incline 2 moves the connecting rod 6 in the opposite direction and brings the locking arm 8 down into position as shown in Fig. 3, or in Fig. 5, as the case may be. So, that with each revolution of the disks C, D, to throw the switch the locking mechanism will first operate to unlock the arm 8 so that the switch bar can be moved to throw the rails, and then again lock the parts in the new position. The locking arrangement is very essential in the interlocking system, first, because an indicator is employed so that if the lock be tampered with by any unauthorized person the signal mechanism will indicate it. Second, the point rails are held in position against accidental displacement. This signal mechanism is shown in said Patent No. 440,502, and is not claimed herein.

The signal mechanism shown in said operation is operated by means of the rocking arm K, the terminal fork L mounted thereon, and the contact terminals *m, n*, with which
5 said forks alternately engage.

Having described our invention, what we claim is—

1. In combination with a railway switch, a switch bar, and the electric motor driving
10 mechanism connecting said motor and switch bar, and adapted to move the switch alternately in opposite directions by the revolution of the motor, the locking mechanism consisting of the cam I, the locking arm 8 oper-
15 ated alternately with the switch throwing mechanism, substantially as specified.

2. In combination with the switch moving mechanism consisting of the electric motor, the plates C, D, provided with the grooves E, F, a stud pin P, and the connecting rod N, 20 the locking mechanism consisting of the cam G, crank arm 5, connecting rod 6, locking arm 8 engaging and disengaging with the switch bar 11, substantially as specified.

In testimony whereof we have hereunto set 25 our hands.

FREDERIC C. WEIR.
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Witnesses:

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