

UNITED STATES PATENT OFFICE.

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ONE-FOURTH TO WILLIAM HARTWELL, OF SAME PLACE.

DANGER-SIGNAL AND LOCK FOR SWITCHES.

SPECIFICATION forming part of Letters Patent No. 531,025, dated December 18, 1894.

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To all whom it may concern:

Be it known that I, GEORGE EDWARD EDWARDS, carder, of the city of Brantford, in the county of Brant, in the Province of Ontario, Canada, have invented certain new and useful Improvements in Danger-Signals and Locks for Switches, of which the following is a specification.

My invention relates to improvements in danger signals and locks for switches and the objects of the invention are—first—to design an automatic operating device whereby the engineer of the train may be apprised of the fact as to whether the switch is closed and locked or not before the train passes the semaphore and—secondly—to provide means whereby the switch is securely locked before the semaphore is drawn down in order to allow the train to pass along the main line and it consists essentially—first—of securing a storage battery preferably at the top of the semaphore post and providing a spring plate which is designed to come in contact with a plate on the semaphore when the board is raised to the horizontal position, one of the wires being connected to the contact plate attached to the semaphore and extending to one of the rails of the track and the other wire being connected to the contact plate on the board of the semaphore and extending to a contact strip located centrally and extending a considerable distance between the rails on that side from which the train is approaching, a trolley wheel being provided in the cab or tender of the engine through which the circuit is completed by wires to an electric bell to and through the axle or frame of the wheels of the tender to one rail, thence to the storage battery as hereinafter more particularly explained, and—secondly—in providing two levers on a platform in proximity to the station, the levers being held in position and one lever being connected by a wire or cord to a weighted lever on the semaphore, which is connected by a rod to the crank of the semaphore board and the other being connected by cranks and rods to a bolt, which is designed to be brought into one or other of two holes in a bar connected to the moving portion of the switch rails, an arm being provided which is designed to extend over the locking

lever of the switch, so as to insure of its being thrown over before the semaphore lever is thrown, the various parts being otherwise arranged and constructed in detail as herein-
after more particularly explained.

The drawing represents a perspective view showing portion of a road-bed, semaphore, locking device and levers, portion of tender or cab and other parts involved in my invention.

A, are the rails; B, a central strip which is supported on a raised bar, B', which is secured to the sleepers centrally between the rails.

C, is the semaphore post and, D, is the board which is pivoted on the rod, *d*, at the top of the post, C.

d', is a crank arm attached to the end of the rod, *d*.

e, is a rod connecting the crank *d'*, with one end of the weighted lever, E.

F, is a wire cord which is connected at one end to the lever, E, and passes down around a pulley, *f*, and along to the lever, G, pivoted on the platform, H, on one side of the quadrant, I.

It will be noticed that the road-bed is immediately broken away between the semaphore and the platform, which is supposed to be at the station in order to indicate the distance between the semaphore and the platform.

J, is a storage battery preferably secured at the top of the semaphore post and, *j*, *j'*, are the binding posts of the storage battery. The binding post, *j*, has extending from it a spring contact plate, *j*², which when the semaphore board is up as shown in the drawing comes in contact with the contact plate, *d*², on the board, D.

k, is a wire leading from the binding post, *j'*, of the storage battery, J, to one of the rails, A.

k', is a wire leading from the contact plate, *d*², on the board, D, to the strip, B.

L, is a wheel of the cab or tender and, L', the axle. The axle, L', is connected by the wire, *l*, to one of the binding posts of the electric bell, M, which is situated on side wall of the tender or cab.

l', is a wire leading from the bell to the bearing, N, of the vertical post, O. The vertical

post, O, has a handle, o, at its upper end and a boss, o', formed at its lower end.

P, is a trolley arm pivoted at the lower end of the post, O, and provided with a trolley wheel, p. The forward end of the trolley arm, P, comes in contact with the boss or stop, o', so that the trolley wheel may always be held at a desired distance above the sleepers. p', is a spring attached to the post O, and extending down over the top of the arm, P, so as to maintain a downward pressure of the trolley wheel upon the strip, B, as it is passing over it.

Q, is a bar connecting the ends of the moving rails of the switch together. The bar, Q, is provided with two holes q, q'.

R, is the switch which is made of any desired form.

S, is a socket secured in position on a sleeper to one side of the bar, Q, opposite the bolt, T, which is secured in a suitable sleeve, T', at the opposite side of the bar, Q. The bolt, T, is connected by the link, t, to the bell-crank U, which is connected by the rod, u, to the bell-crank, V, which in turn is connected by the rod, v, to the lever, W. The levers, G, and W, are both provided with spring plungers designed to engage in notches in the quadrant, I. The lever G, is also provided at the lower end with a laterally extending bar, g, attached to or forming part of the same, which extends over the lever, W, as shown.

Having now described the principal parts involved in my invention I shall briefly describe the utility and advantages arising from the danger signal and locking device for my switch.

The train is supposed to be traveling in the direction indicated by arrow. The board, D, is shown up at danger. In case the engineer should fail to see the board or lamp, D', through darkness, fog or the light having gone out, the semaphore being up and the contact plate, j², being in contact with the plate, d², of the board it will be seen that immediately upon the trolley wheel, p, coming upon the strip, B, which it will be understood extends for a considerable distance along the track before the semaphore, the circuit will be completed and the current pass from the storage battery over the wire, k, to the rail, through the rail, wheel, L, axle, L', wire, l, bell, M, causing it to ring, wire, l', bearing, N, post, O, arm, P, trolley wheel, p, and wire, k', plates, d², and, j², back to the storage battery. Consequently the engineer or conductor or other person having charge of the train will be immediately apprised of the fact that the main line is open and that there is danger in proceeding any farther. Should, however, the lever, G, be thrown to the opposite side so as to throw the board, D, down and the contact plate, d², out of contact with the plate j², the circuit will not be completed and the bell will not ring and consequently the engineer or conductor can with perfect safety proceed. It will be seen that before the sema-

phore can be moved down in order to let the train pass, the switch operating lever, W, must be thrown so as to securely lock the switch by means of the bolt, T, which passes through one of the holes, q, q', in the bar, Q, into the socket, S.

When it is desired to use the engine for shunting about the yard the trolley arm and wheel, P, p, may be raised up and the pin, n, shown to extend through the upper hole, o², in the post, O, may be inserted into the lower hole o², so as to keep the trolley wheel from coming in contact with any obstructions in the yard.

From this description it will be seen that I provide a very effective and simply operated device from which not only will the engineer or conductor of the train be warned with certainty of any danger but also whereby the switch will always be securely locked in position so that there will be no danger of the train being derailed after it has passed the semaphore.

What I claim as my invention is—

1. In combination with the semaphore and electrical connections to be operated by the train in case of danger, a switch, the levers "W" and "G," connections between said switch and lever W, and connections between the lever G and the semaphore and means for connecting said lever whereby the forward movement of the lever W to lock the switch will operate the lever G to change the semaphore from a danger signal, substantially as described.

2. In combination, the semaphore, the bell on the train, and electrical connections whereby the bell is operated when the semaphore is at danger, the switch, the lock for retaining it in proper position, the lever at the station for locking and unlocking the switch, and connections from said lever to the semaphore whereby the latter is retained at the danger signal until the switch is locked, substantially as described.

3. In combination with the semaphore, the bell on the train, and the electrical connections whereby the bell is operated when the semaphore is set to indicate danger, the switch, the sliding bolt for locking the rails against movement, the lever on the platform with connections to the bolt, the weighted lever E operatively connected to the semaphore, and connections therefrom to the lever on the platform whereby the rails must be locked against movement before the semaphore can be removed from the position of danger, substantially as described.

4. The combination with the post, C, board, D, contact plates, j², and, d², and storage battery and circuit wires all arranged to complete the circuit through the bell in the tender of the engine when the board is up as specified, of the crank, d', on the pivot rod of the board, rod, e, weighted lever, E, wire, F, lever, G, having a lateral extension, g, quadrant, I, and lever, W, and means for

locking the switch by the operation of such lever as and for the purpose specified.

5 5. The combination with the post, C, board, D, contact plates, j^2 , and d^2 , and storage battery and circuit wires all arranged to complete the circuit through the bell in the tender of the engine when the board is up as specified, of the crank, d' , on the pivot rod of the board, rod, e , weighted lever, E, wire,

F, lever, G, having a lateral extension, g , rod, quadrant, I, and lever, W, rod, v , bell-crank, V, rod, u , bell crank, U, link, t , bolt, T, sleeve, T', cross bar, Q, with holes, q , q' , and socket, S, all arranged as and for the purpose specified.

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Witnesses:

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