

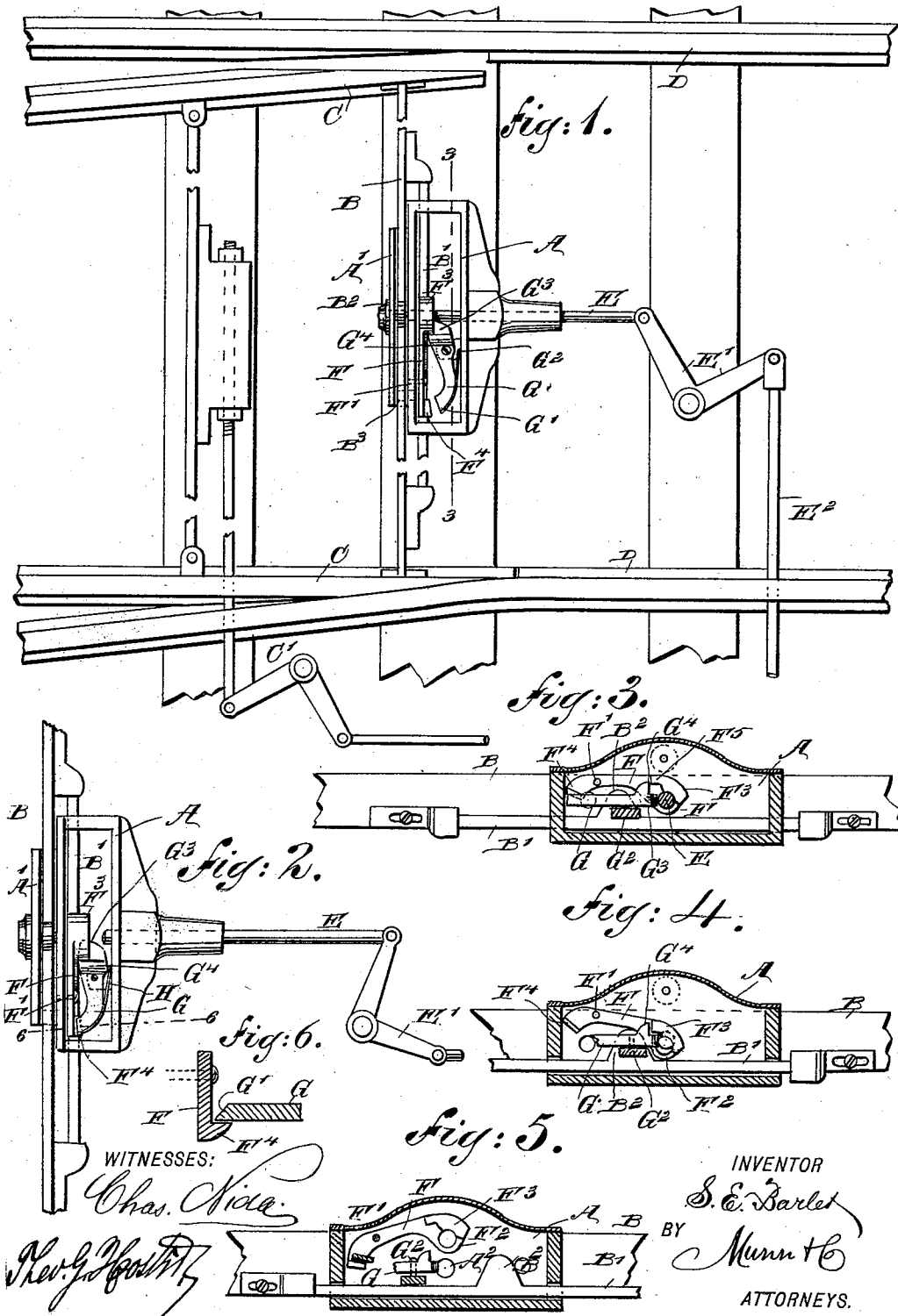
(No Model.)

S. E. BARLET.

SWITCH LOCK.

No. 542,182.

Patented July 2, 1895.



UNITED STATES PATENT OFFICE.

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SWITCH-LOCK.

SPECIFICATION forming part of Letters Patent No. 542,182, dated July 2, 1895.

Application filed August 16, 1894. Serial No. 520,501. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL E. BARLET, of Red Bank, in the county of Monmouth and State of New Jersey, have invented a new and Improved Switch-Lock, of which the following is a full, clear, and exact description.

The invention relates to interlocking switch systems for railroads, and more particularly to switch-locks such as shown and described in the Letters Patent of the United States No. 517,722, granted to me under date of April 3, 1894.

The object of the present invention is to provide a new and improved switch-lock, which is very simple and durable in construction and arranged to positively prevent the operator in charge of the tower from wrongly setting the switch or the signal.

The invention consists in certain parts and details and combinations of the same, as will be hereinafter fully described, and then pointed out in the claims.

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

Figure 1 is a plan view of the improvement as applied and with the box cover removed. Fig. 2 is a like view of the improvement with the switch-bar unlocked. Fig. 3 is a transverse section of the improvement on the line 3 3 of Fig. 1. Fig. 4 is a similar view of the same with the plunger withdrawn. Fig. 5 is a like view of the same with the switch-bar shifted, and Fig. 6 is an enlarged sectional side elevation of part of the improvement on the line 6 6 of Fig. 2.

The improved switch-lock is mounted in a suitably-constructed box or casing A, secured on the ties between the track rails, as illustrated in Fig. 1, the said box or casing being formed with a transversely-extending guideway A', through which passes transversely the switch-bar B, connected with the switch-rails C, operating in conjunction with the main track-rails D. The switch-rails C are connected by the usual mechanism C' under the control of the operator in charge of the tower, so as to enable the operator to throw the switch to an open or closed position as the case may require.

In the box or casing A is mounted to slide longitudinally a plunger or bolt E, connected at one end by a bell-crank lever E' with a suitable mechanism E², extending to the tower and under the control of the operator therein, the said mechanism E² also controlling the signal for the switch.

On the switch-bar B is secured a rod B', extending transversely and parallel to the switch-bar, and passing through the sides of the box or casing A, as plainly illustrated in the drawings. On this rod B', inside of the box A, is formed a cam B², adapted to engage the free end of the lever F, pivoted at F' to the back of the box A, the said lever being adapted to open and close an aperture A², formed in the back of the box A and adapted to register with two apertures B³ and B⁴, formed in the switch-bar B. The free end F² is provided with an aperture adapted to register with the aperture A², and the said aperture A² is in alignment at all times with the plunger E, so that when the apertures A², B³, or B⁴ and the aperture in the free end F² of the lever F are in alignment with each other, then the plunger E can pass through the said apertures to lock the switch-bar B, and consequently the switch-rails C in either an open or a closed position, according to which of the apertures B³ or B⁴ is engaged by the said plunger.

On the free end F² of the lever F is formed a projection F³, adapted to pass into the path of the plunger E at the time the free end of the lever F has swung into its lowermost position, as indicated in Fig. 4. The rear end of the lever F is provided with a lug F⁴, beveled at the under side and adapted to be engaged at its upper surface by the beveled end G' of a second lever G, mounted to swing horizontally from its pivot G², arranged in the box A. The beveled end G' of the lever G is adapted to be engaged by the beveled under side of the lever F⁴, so as to impart a swinging motion to the said lever at the time the front or free end of the lever F is caused to swing upward by the action of the cam B², as hereinafter more fully described. The front end of the lever G is beveled at G³, and extends into the path of the plunger E, so that the said plunger on being

moved inward strikes the said beveled edge G^3 , to impart a swinging motion to the lever G to disengage its rear end from the lug F^4 to permit the lever F to swing downward at its free end by its own gravity until the downward swinging motion of the lever is arrested by the under side of the lug F^3 , resting on top of the entering end of the plunger E . (See Fig. 3.)

When the plunger is withdrawn, then the plunger finally passes from under the lug F^3 , so that the lever F is again free to swing further downward at its free end F^2 until the end F^5 of the lug F^3 rests on the end G^3 of the lever G . (See Fig. 4.) A lug G^4 on the lever G is adapted to abut against the edge of the end F^5 , so that the levers F and G interlock each other. A spring H presses on the lever G , so as to cause the rear end thereof to swing toward the lever F and the front end toward the entering end of the plunger E .

The operation is as follows: It will be understood that the switch lock and signal are operated from the tower and connected with each other by a suitable interlocking mechanism. Now, when the several parts are in the position illustrated in Fig. 1, then the plunger E is in its innermost position and engages the apertured end F^2 of the lever F , the back aperture A^2 , and the aperture B^3 in the switch-bar B , so that the latter is securely locked in place and the switch-rails C cannot be shifted, the switch then remaining open for the main track, as shown in said Fig. 1. Now, when it is necessary to shift the switch-rails C to open the side track, then the operator in the tower first unlocks the switch by withdrawing the plunger E . He then shifts the switch to the side track and locks it again by returning the plunger E , provided all parts in direct sympathy with such movement have responded, and the interlocking levers F and G have moved as required. This being perfected, the operator is at liberty to display the proper signal governing the said switch. The approaching train or engine is then permitted to proceed in safety. After the said train or engine has cleared the switch the operator may reverse the signal or set it to "danger." Then he is at liberty to unlock the switch by withdrawing the plunger E . For instance, if the operator wants to operate the switch to permit a train to pass on the side track, he first unlocks the switch-bar B by withdrawing the plunger E , (see Fig. 2,) so that the operator can manipulate the device C' to shift the switch-rails C for the side track. Now, as soon as the switch-bar B moves transversely the cam B^2 moves under the free end of the lever F and imparts a swinging motion to the same in an upward direction, whereby the lug F^4 imparts a swinging motion to the rear end of the lever G until the said lug F^4 has passed the free end of the lever G and the latter snaps in over the lug F^4 by the action of the spring H , thus locking the lever F in an uppermost position, as shown in Fig. 5.

The plunger E can now be returned to engage the aperture B^4 in the switch-bar B to lock the latter in place. In moving the plunger inward the lever G is acted on at its beveled edge G^2 , so that the lever F is unlocked and the latter swings downward to rest with its lug F^3 on the plunger entered into the aperture B^4 . Now, when the plunger E is again withdrawn by the operator manipulating the mechanism E^2 from the tower, then the plunger on leaving the under side of the projection or lug F^3 , permits the lever F to swing farther downward to bring the projection F^3 in the path of the plunger, thereby preventing the re-entrance of the plunger to the aperture A^2 and aperture B^4 in the switch-bar B , unless the latter is first shifted. Thus it will be seen that until the switch is again shifted the operator cannot unlock the switch by returning the plunger E , owing to the fact that the projection F^3 , on the lever F , prevents the entrance of the plunger to the apertures A^2 and B^4 . The switch must thus be shifted to its proper position from the side track to the main track, or vice versa, as the case may require, so that the switch-bar B , by the cam B^2 , acts on the lever F , as previously described.

When the switch is properly locked for either side track or main track, which is indicated by the signal governing the said switch, then the operator can allow as many trains as may be desired to pass under said signal; but should the operator reverse the signal or set it to "danger," and then unlock the switch by withdrawing the plunger E , then he cannot display a clear signal and allow other trains to use the same track, as did the previous train, as he cannot return the plunger E , which controls the signal previously displayed, for the reason that the lever F moves in the path of the entering plunger and prevents its passage to the apertures A^2 , B^3 , or B^4 . Consequently the operator must shift the switch after the plunger is withdrawn, as the said plunger cannot be returned until the switch is in the proper position for the side track or for the main track.

It will be seen that by this mechanism the operator or leverman is prevented from locking the switch unless it is in its proper position, from the fact that the lock-lever in the tower, which is connected to mechanism E^2 and bell crank E' and plunger E cannot be manipulated, as the plunger E will not register with the aperture in the free end of the lever F . The operator or leverman being thus prevented from manipulating the lock-lever and the mechanisms in sympathy therewith, he cannot display the necessary signal controlling the switch in question, as the lock controls the signal. Hence accidents to moving trains arising from disconnected switches, movable frogs, and derails or other wire out of adjustment are absolutely prevented, as engineers are wholly controlled and move according to the signals governing the tracks and

switches over which they are obliged to move. Hence the absolute safety of train movement wholly depends upon the signal, as there is no other source to assure or indicate the position and condition of tracks and switches; but the semaphore signal is placed there for the express purpose of indicating "safety." However, a secret death-trap is underlying all moving trains at interlocking stations, under the system now in use; but the device herein described obviates all danger of derailment and signals must absolutely indicate "safety."

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

1. In a switch lock, the combination with an apertured switch bar, and a plunger adapted to enter the aperture of the switch bar, of a pivoted lever provided at one end with an aperture and adapted to be operated by the switch bar, and a second lever engaging the first named lever to hold it raised, the said second lever being adapted to be engaged by the plunger to release the first named lever, substantially as and for the purpose set forth.

2. In a switch lock, the combination with an apertured switch bar, and a plunger adapted

to enter the aperture of the switch bar, of a pivoted lever having at one end an aperture to receive the plunger and a projection above the aperture to pass into the path of the plunger, and at its other end with a lug, and a spring pressed lever having one end projecting into the path of the plunger, and its other end adapted to engage the lug of the first named lever, substantially as herein shown and described.

3. In a switch lock, the combination with an apertured switch bar provided with a cam, and a plunger adapted to engage the aperture of the switch bar, of a pivoted lever provided at one end with an aperture and a projection, and at its other end with a lug, and a spring pressed lever having its ends beveled and provided with a lug adapted to engage the end of the projection of the first named lever, the said spring pressed lever being engaged by the lug of the said first named lever and projecting into the path of the plunger, substantially as described.

SAMUEL E. BARLET.

Witnesses:

N. FORD,
H. M. NEVIUS.