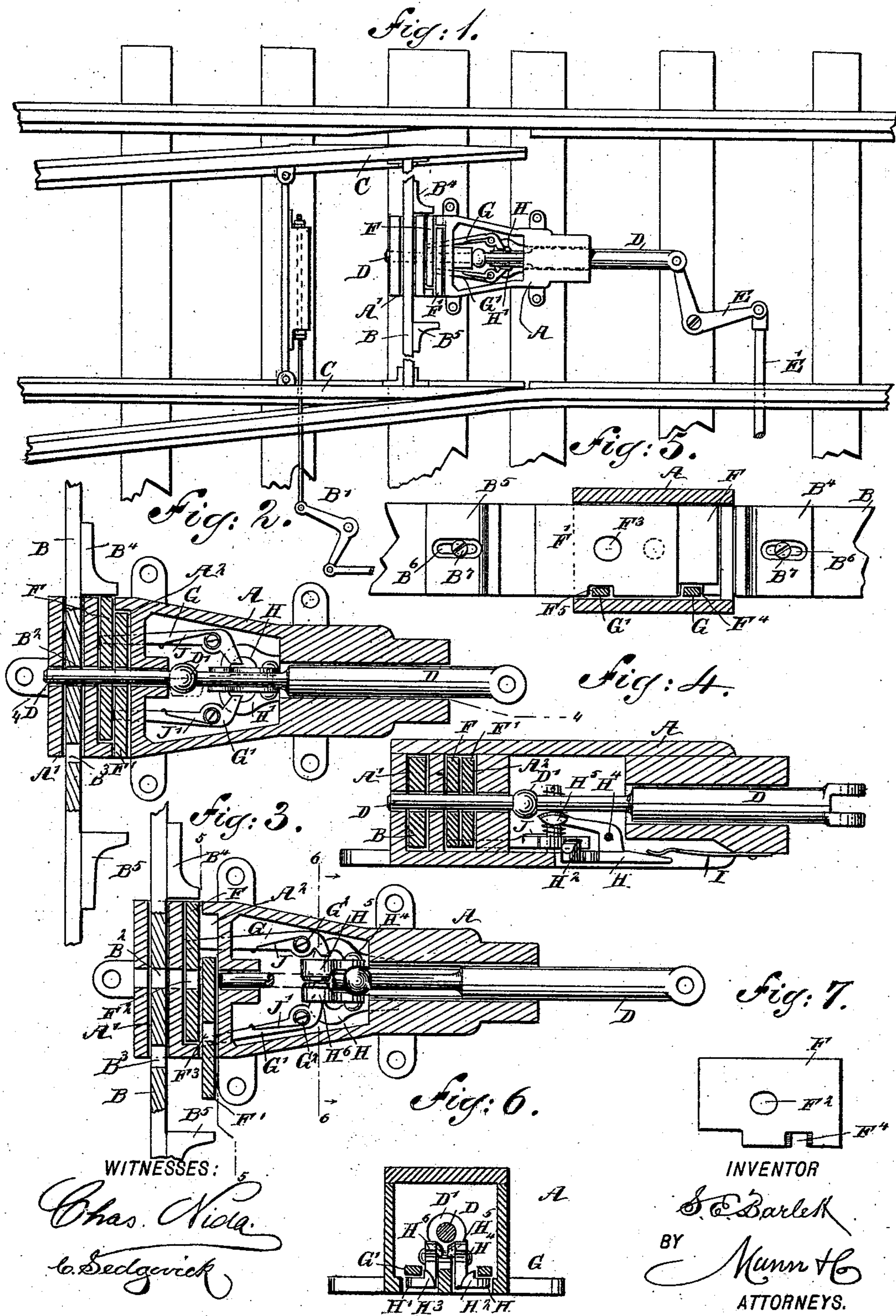


(No Model.)

S. E. BARLETT.
SWITCH LOCK.

No. 517,722.

Patented Apr. 3, 1894.



UNITED STATES PATENT OFFICE.

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SWITCH-LOCK.

SPECIFICATION forming part of Letters Patent No. 517,722, dated April 3, 1894.

Application filed May 22, 1893. Serial No. 475,088. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL E. BARLETT, of Red Bank, in the county of Monmouth and State of New Jersey, have invented a new and

5 Improved Switch-Lock, of which the following is a full, clear, and exact description.

The invention relates to interlocking switch systems for railroads, and its object is to provide a new and improved device to prevent

10 the operator in charge of the tower from wrongly setting the switch or signal. The invention consists of a switch or bolt under the control of the operator and adapted to engage the switch bar to lock the same in

15 position, plates mounted to slide and adapted to be engaged by the said bolt, and a mechanism controlled by the said bolt for shifting the said plates.

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

Reference is to be had to the accompanying drawings, forming a part of this specification,

25 in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a plan view of the improvement as applied, with the cover of the box removed.

30 Fig. 2 is an enlarged sectional plan view of the improvement. Fig. 3 is a similar view of the same with the plunger withdrawn. Fig. 4 is a sectional side elevation of the same on the line 4—4 of Fig. 2. Fig. 5 is a cross section of the same on the line 5—5 of Fig. 3.

35 Fig. 6 is a similar view of the same on the line 6—6 of Fig. 3; and Fig. 7 is a face view of one of the plates.

The improved switch lock is mounted in a suitably constructed casing A, secured on the

40 ties between the track rails, as illustrated in Fig. 1, the said casing or box being formed with a transversely extending guideway A', through which passes the switch bar B, connected with the switch rails C, in the usual

45 manner. The switch rails are also connected with the usual mechanism B', under the control of the operator in charge of the tower, to enable him to throw the switch to an open or closed position, as the case may require.

50 In the switch bar B are formed two openings or apertures B² and B³, adapted to be en-

gaged by the plunger or bolt D, mounted to slide longitudinally in suitable bearings in the box A and connected at one end, by a bell-crank lever E, with a suitable mechanism 55 E', extending to the tower and under the control of the operator therein. This mechanism E' also controls the signal. In the box A, and next to the guideway A' is arranged a second guideway A², containing two plates 60 F and F', adapted to slide transversely through openings in the sides of the box A, it being understood that the plate F is adapted to slide to the right and the other plate F' fitted to slide to the left. The said plates are 65 adapted to be engaged by lugs B⁴ and B⁵, respectively, held adjustably on the bar B at opposite sides of the box A, as is plainly shown in Figs. 1 and 5. In order to make the said lugs adjustable, I provide each of the 70 same with an elongated slot B⁶, through which passes a screw B⁷, screwing in the bar B, see Fig. 5. The plates F and F' are formed with apertures F² and F³, respectively, which are oval in shape, being elongated in the 75 horizontal direction (for a purpose hereinafter stated). The said apertures are so located that they are adapted to register with the plunger or bolt D and with the corresponding aperture B² or B³ in the bar B, to permit of 80 passing the plunger through the said plates and bar to lock the latter in position. The plates F and F' are formed at their lower edges, or near their outer ends, with notches 85 F⁴ and F⁵, respectively, engaged by the forward ends of levers G and G', respectively, fulcrumed on the vertically disposed pivots G², arranged within the casing A. The inner ends of the levers G and G' are adapted to be engaged by lugs H² and H³, respectively, 90 formed on levers H and H', respectively, fulcrumed on a horizontally disposed pivot H⁴, supported within the casing A. The levers H and H' are provided with upwardly extending arms H⁵ and H⁶, respectively, having their opposite faces slightly beveled, as will be readily 95 seen by reference to Figs. 3, 4 and 6. The arms H⁵ and H⁶ are adapted to be engaged by a ball projection D', secured or formed on the plunger, D, which projection depresses the 100 latter when the plunger passes over them. The levers H and H' are held in their normal

position by springs I, pressing on the rear ends of the said levers, as will be readily understood by reference to Fig. 4, so that the beveled faces of the arms H^5 and H^6 are always in contact with the plunger D. Springs J and J', press the levers G and G' respectively, so as to cause the said levers to force the corresponding plates F and F' outward after the levers are released by the lugs H^2 and H^3 , as previously described, and in case the bar B has been shifted, as hereinafter more fully described.

The operation is as follows: It will be understood, that the switch, lock and signal are all operated from the tower and connected with each other by interlocking mechanism. When the several parts are in the position illustrated in Fig. 1, the plunger or bolt D engages the plates F, F', and the switch bar B, so that the switch rails C cannot be shifted, the switch then remaining open for the main track, as indicated in the said figures. Now, when it is necessary to shift the switch rails C to open the side track, the operator in the tower first unlocks the switch by withdrawing the plunger D, then shifts the switch to the side track, and locks it again by returning the plunger D, providing all parts in direct sympathy with such movement have responded, and the plate F, or F', has moved as required. This being perfected the operator is at liberty to display the proper signal governing said switch. The approaching train or engine is then permitted to proceed in safety. After 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 D. For instance, if the operator wants to operate the switch to permit the train to pass on the side track, he first unlocks the switch bar by withdrawing the plunger D, as illustrated in Fig. 3, so that the operator can manipulate the device B' to shift the switch rails C for the side track. As soon as the plate F or F' moves outward, the plunger D cannot be returned to lock the bar B, as the apertures in the corresponding plates do not then register with the plunger, and consequently the latter cannot be moved in position to lock the switch bar B in place. Thus, it will be seen that until the switch is again shifted, the operator cannot lock the switch by returning the plunger D, owing to the fact that the plate F or F' does not register, consequently, the switch must be shifted to its proper position from the side track to the main track, or vice versa, as the case may require. However, when the switch is properly locked for either side track or main track, which is indicated by the signal governing said switch, 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 thoughtlessly unlock the switch by withdrawing the plunger D, 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 D which controls the signal previously displayed, as the plate F or F' passing outward, closes up the aperture in the bar B. 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. Now, when shifting the switch the corresponding lug B^4 or B^5 moves the corresponding outwardly standing plate F or F' back into the box A, so as to bring the apertures in the said plates to register with each other and with the plunger, and also the corresponding aperture B^2 or B^3 in the switch bar to register with the other apertures in the plates and in register with the plunger D. The operator can now actuate the mechanism E' to move the plunger D to lock the bar B in place. When the plunger D moves inward, the projection D' passes away from the arms H^5 and H^6 , so that the lugs H^2 and H^3 again engage the inner ends of the levers G and G' and lock the same in place. The elongation of the apertures F^2 , F^3 , before referred to permits a certain essential action of the levers G, G', namely: When the plunger, D, is withdrawn and its projection, D', passes over the arms H^5 , H^6 , the catches H^2 , H^3 , disengage from and release said levers, so that they are free to move the plates F, F', outwardly, and this they do to the limit allowed by the elongated apertures, so that when the catches, or lugs, H^2 , H^3 , of arms H^5 , H^6 , again rise (after passage of the projection D' rearward) the said lugs can not then re-engage with the lugs on the levers, since they are no longer in the required registration. The plates F, F', will obviously continue to be held in normal position until the plunger is withdrawn from the elongated apertures. In other words, although the levers G, G', are free to move the plates F, F' fall outward so soon as the pawl, D', depresses the former, yet the plates are held so long as the plunger remains inserted through them.

It will be seen that by this mechanism the operator is prevented from locking the switch unless it is in its proper position, and he cannot display the proper signal controlling such switch unless it is properly set and properly locked, as previously explained, consequently, accidents are utterly impossible.

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

1. A switch lock comprising a plunger or bolt under the control of the operator and adapted to engage the switch bar to lock the same in place, plates adapted to be engaged by the said bolt, and a mechanism controlled by the said bolt for shifting the said plates, substantially as shown and described.

2. A switch lock comprising a plunger or bolt under the control of the operator and

adapted to engage the switch bar to lock the same in position, plates mounted to slide and adapted to be engaged by lugs on the switch bar, the said plates being provided with apertures adapted to register with the said plunger to be engaged by the same, and spring-pressed levers for shifting the said plates and adapted to be locked or unlocked by the said plunger, substantially as shown and described.

3. A switch lock comprising a switch bar provided with lugs, a plunger or bolt under the control of the operator and adapted to engage the said switch bar to lock the same in position, sliding plates adapted to be moved inward by the said lugs on the switch bar, spring-pressed levers connected with the said plates, and a second set of levers adapted to lock the said first-named set of levers and controlled by a projection on the said plunger, substantially as shown and described.

4. A switch lock comprising a casing, a plunger fitted to slide therein and under the control of the operator, plates fitted to slide in opposite directions in the said casing and having apertures adapted to be engaged by the said plunger, spring-pressed levers engaging the said plates to move the latter outward, a

second set of spring-pressed levers arranged within the said casing, and a projection on the said plunger and adapted to engage the second set of levers to unlock the first set of levers, substantially as shown and described.

5. A switch lock comprising a casing, a plunger fitted to slide therein and under the control of the operator, plates fitted to slide in opposite directions in the said casing and having apertures adapted to be engaged by the said plunger, spring-pressed levers engaging the said plates to move the latter outward, a second set of spring-pressed levers arranged within the said casing, a projection on the said plunger and adapted to engage the second set of levers to unlock the first set of levers, and a switch bar passing through the said casing and adapted to be engaged by the said plunger, the said switch bar being provided with adjustable lugs arranged on opposite sides of the casing to engage the said plates, substantially as shown and described.

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Witnesses:

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C. SEDGWICK.