

2 Sheets—Sheet 2.

No. 489,583.

Patented Jan. 10, 1893.

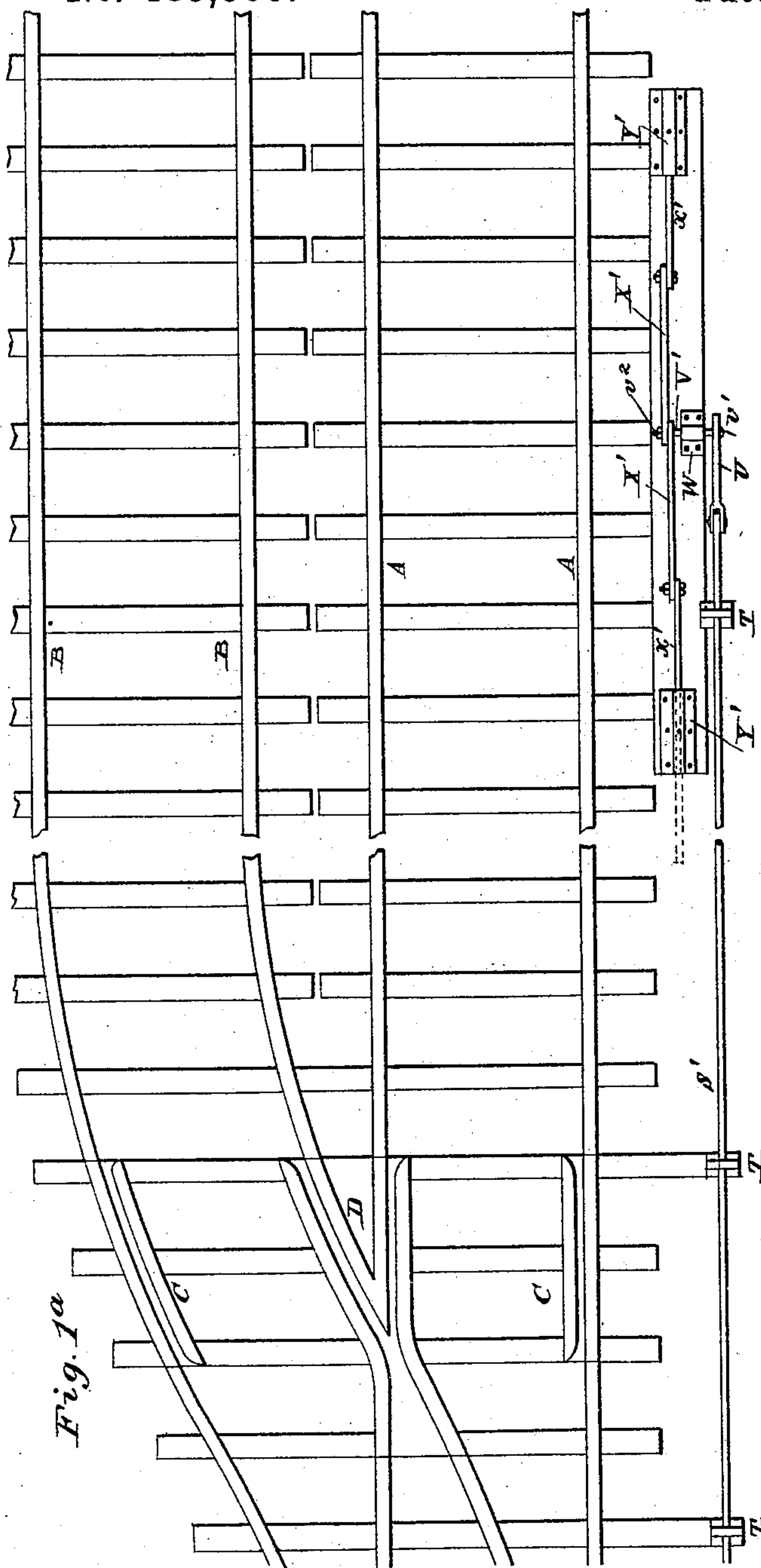


Fig. 1a

Witnesses.

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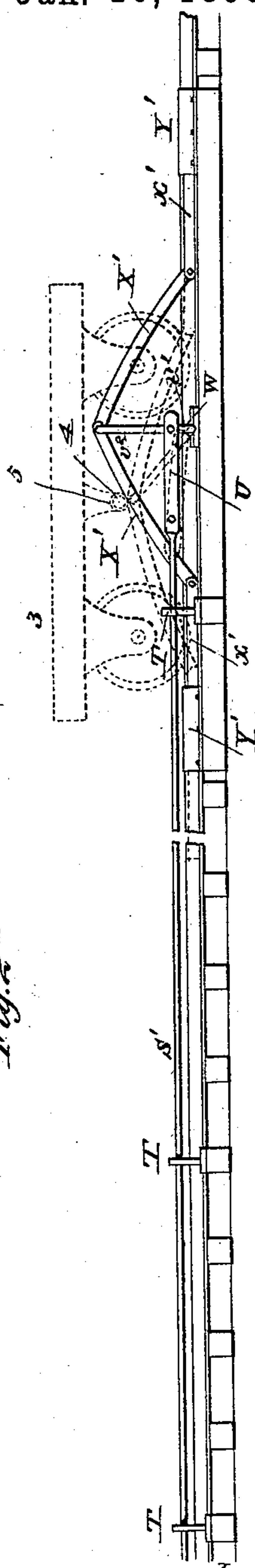


Fig. 2a

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AUTOMATIC SAFETY RAILWAY-SWITCH.

SPECIFICATION forming part of Letters Patent No. 489,583, dated January 10, 1893.

Application filed July 6, 1892. Serial No. 439,099. (No model.)

To all whom it may concern:

Be it known that I, HENRY C. O. GRUHLKE, a citizen of the United States, residing at Morris, in the county of Grundy and State of Illinois, have invented a new and useful Improvement in Automatic Safety Railroad-Switches, of which the following is a specification.

My invention relates to an automatic safety railroad switch.

The object of my invention is the production of a switch, which, if accidentally left open, will be automatically closed by the approach of a train from either direction on the main line before the train arrives at the switch.

My invention will first be fully described in connection with the accompanying drawings, and then pointed out in the claim.

Figures 1 and 1^a taken together form a plan view of my invention. Figs. 2 and 2^a taken together form a side elevation of the same. Fig. 3 is a perspective detail view of the locking mechanism.

Figs. 1 and 1^a will be referred to hereinafter as Fig. 1, and Figs. 2 and 2^a will be referred to hereinafter as Fig. 2.

Referring to Figs. 1 and 2, A are rails of a main line, B are rails of a turnout, C are guard rails and D is a frog. E are switch-points connected by the rods F and spiked down at G in the ordinary manner. H is a throw-bar attached to the under side of the switch-points E at their toes, and having its ends extended beneath and beyond the rails A in order to adapt it for use when the switch is placed on either side of the track. To one end, *h*, in the present instance, is pivoted a slide-bar I notched in its upper surface at *i* as clearly shown in Fig. 3; and to this slide-bar is pivoted one end of a link K, the other end of which is pivoted to a crank *l* formed on the lower end of a shaft L which is bent upward to form a hand-lever *l'*, as clearly shown in Fig. 2. Shaft L is journaled at *m* to an ordinary switch-stand M. The switch is held normally closed by two springs N, one on each side of the main track, which actuate rods O passing through holes in casings P, which are broken away in Fig. 1 to show the springs N and rods O.

Slot-bar I passes through a transverse slideway *q* in a casing Q which has above it a lon-

gitudinal slideway *q'* as shown in dotted lines in Fig. 1. Through this slideway *q'* passes a locking-bar R, in the under side of which are two notches *r, r'*, between which is a plain central portion 1, as shown in Fig. 3.

To the ends of locking-bar R are attached rods S, S' which extend parallel with the main track and some distance each side of the point of switch, being supported by keepers T. The outer extremities of these rods S, S' are connected by links U to cranks *v, v'* formed on the ends of rock-shafts V, V' journaled at W. The other ends of these rock-shafts are bent upward to form levers *v²* which are pivotally connected to the ends of curved contact-bars X, X' whose other ends are pivoted to guide-bars *x, x'* sliding in guides Y, Y'. Rods S, S' are actuated by springs Z, Z' which tend to keep the locking-bar I in such a position that its plain central portion 1 will be in the middle of the longitudinal slideway *q'* and will engage notch *i* in slide-bar I when the switch is opened, thereby preventing the closing of the latter by the pressure of the springs N. It is apparent from Fig. 3 that when the locking-bar is drawn in either direction the plain central portion 1 will be drawn out of the notch *i* in slide-bar I and one or the other of slots *r, r'* will come in line with the slide-bar I, releasing the latter and permitting the springs N to close the switch. When the rods S, S' are drawn in either direction for the purpose of so actuating the locking-bar, one or the other of springs Z, Z' will be compressed and retained in that position by the slide-bar I engaging one or the other of the notches *r* or *r'* in the locking-bar.

2. is a hand crank-lever for moving the locking-bar R by hand.

In Fig. 2, 3 is a representation in dotted lines of a car or engine truck on the main line, having a stud 4 fastened at right angles to the track and projecting some distance out. On this stud is a roller 5 adapted to engage contact-bars X, X' when the switch is open. The normal position of the contact-bars when the switch is closed is shown by the dotted lines. In this position they are out of the way of the roller 5 and therefore not actuated by a passing train.

In order that the switch may be opened and remain open to permit a train to enter the

turnout when so desired, the contact-bars X are located more than a train length from the switch and the rod S extended to them. By bringing the train between the contact-bars X and the switch before opening the latter, the train can be run onto the turnout without actuating the automatic mechanism.

The operation of my invention is as follows: The switch is opened by means of switch-lever 10 *l'* which draws over the switch-points E, through the medium of the throw-bar H and slide-bar I, at the same time compressing the springs N. In this position the switch is held by the locking-bar R engaging its plain central portion 1 with the notch *i* in slide-bar I. The switch is closed by drawing the locking-bar R longitudinally in either direction by means of the hand crank-lever 2. If at any time the switch be accidentally left open it will be automatically closed by a train coming toward the switch from either direction on the main line, by means of the roller 5 on the engine striking the curved contact-bars and thereby actuating the rock-shafts V, V' which operate the locking-bar R through the medium of rods S, S', forcing the said bar in the same direction as the train is moving, disengaging the slide-bar I and permitting the springs N

to close the switch and thus give a clear main line for the moving train, and preventing it from being switched onto the turnout. 30

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

In an automatic switch, the combination, 35 with mechanism for opening the switch, of a notched slide-bar, a locking-bar for engaging the notch in the slide-bar to hold the switch open, a rod connected to the locking-bar, springs for pulling the locking-bar into engagement with the notch in the slide-bar, a 40 crank-lever, a link connecting the crank-lever to the rod, contact-bars pivoted at their inner ends to the crank-lever, guides, guide-bars sliding in the guides and pivotally connected to the outer ends of the contact-bars, 45 and springs for closing the switch, substantially as described and for the purpose set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses. 50

HENRY C. O. GRUHLKE.

Witnesses:

P. A. ARMSTRONG,
S. C. STOUGH.