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C. H. REMINGTON.
AUTOMATIC RAILROAD SWITCH DANGER SIGNAL.

(Application filed June 2, 1902.)

(No Model.)

2 Sheets—Sheet 1.

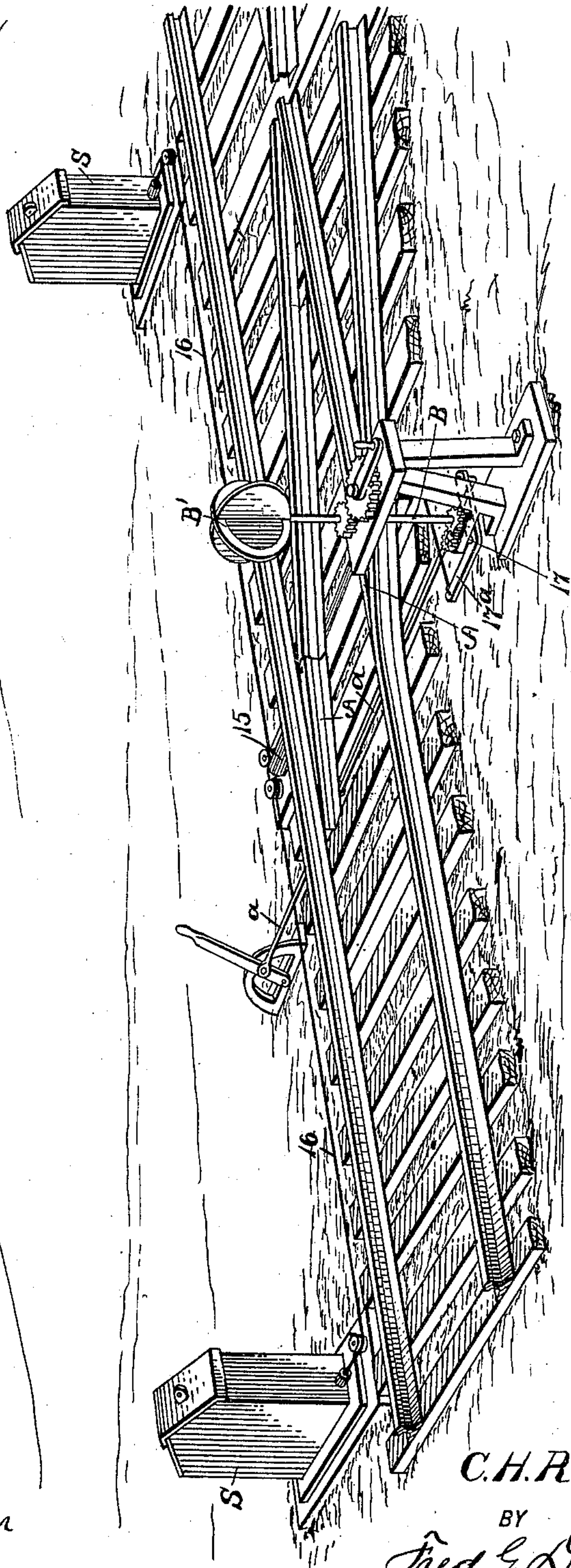


Fig. 1.

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AUTOMATIC RAILROAD-SWITCH DANGER-SIGNAL.

SPECIFICATION forming part of Letters Patent No. 707,010, dated August 12, 1902.

Application filed June 2, 1902. Serial No. 109,954. (No model.)

To all whom it may concern:

Be it known that I, CHARLES H. REMINGTON, residing at Roswell, in the county of Chaves and Territory of New Mexico, have
5 invented certain new and useful Improvements in Automatic Railroad-Switch Danger-Signals, of which the following is a specification.

My present invention relates to that type
10 of railroad signal mechanisms coöperatively used with switch-setting means whereby when the switch is set to an open position a signal at a suitable distance in advance of the switch will be automatically operated; and
15 my said invention primarily seeks to provide a signal mechanism of the character stated of a simple and economical construction in which the several parts are combined to operate in a positive manner and shiftable
20 to their danger or safe position by the opening and closing of the switch with which they are combined.

In its generic nature my invention comprehends a novel construction of housing, including a detachable portion, which *per se*
25 forms the signal, a toggle-lever mechanism located within the housing and joined with the detachable portion, a means also located within the housing for automatically holding
30 the signal and its operating mechanism to its closed or "safety" position, and connections joining the signal-operating mechanism with the switch-shifting means.

In its more subordinate features my invention consists in certain novel details of construction and peculiar combination of parts, all of which will hereinafter be fully explained, and specifically pointed out in the
35 appended claims, reference being had to the accompanying drawings, in which—

Figure 1 is a perspective view illustrating the practical application of my invention. Fig. 2 is a cross-section of the switch portion
40 of the road-bed, the switch-setting means being in side elevation and the signal-housing in section, the switch being at its closed position and the signal devices to their closed or safety position. Fig. 3 is a similar view, the switch being open and the signal devices
45 to their raised or "danger" position. Fig. 4 is a horizontal section on the line 4 4 of Fig.

2. Fig. 5 is a similar view on the line 5 5 of Fig. 3.

In the practical construction of my invention the signal mechanism (indicated by S) is
55 situated a suitable distance in advance of the switch or side track, and while but one signal mechanism is shown it is obvious another such mechanism may also be utilized at the other end of the switch. The switch A, of
60 any approved construction, is joined with the switch-shifting rod or member *a* in the usual manner, the switch-rod *a* being shown joined with the lower end of the member B, on the upper end of which is mounted the usual
65 semaphore-plate B'.

The signal mechanism S comprises a housing 1, formed of the sides 1^a 1^a, ends 1^b, the bottom 1^c, and the top, the latter consisting of a half-section 2, fixedly secured, and a
70 movable section 3. The section 3, which forms a semaphore or signal member and which may carry a signal-lantern for night signaling, (see dotted lines,) has edges 3^a 3^a, adapted to lap over the upper edge of the top
75 section 2 and the upper edge of the adjacent end 1^b to form a water and dust tight closure for the housing when the signal devices are at their safety position.

The signal member 3 is bolted or otherwise
80 made fast to a signal-block 4, having an arm or shank 4^a, slotted lengthwise, as at 4^b, to ride upon a cross pin or rod 5, made fast within the housing. The lower end of the arm 4 pivotally joins with a link-arm 6, which has
85 a shiftable fulcrum 6^a in the nature of a bolt, upon which are mounted washers or roller-bearings adapted to engage with curved slots 6^c, the curvature of which is such as to provide for a solid bearing of the fulcrum 6^a during
90 its shifting action, as will hereinafter be more fully described, and to further steady the movement of the arm 6 it is also held to engage a guide 6^d, as shown.

The lower end of the link-arm 6 is pivotally
95 joined with the lower link or toggle member 7, which has its fulcrum 7^a in a vertical plane with the fulcrum of the upper arm, and the said member 7 is normally drawn to one of its positions at an angle to the vertical plane of
100 the housing (see Fig. 2) by a weight 8, connected to said member 7, near the upper end

thereof, by the flexible connection 9, that passes over the guide-roller 10, as shown in said Fig. 2.

Instead of using a weight for holding member 7 to the position stated a spring 11 may be employed for such purpose, connected to the member 7 at a point below its fulcrum and to the side of the casing, as shown in Fig. 3, and when a counterweight is used, as shown in Fig. 2, an additional weight 10^x may be connected to the lower end of bottom lever member, as shown.

15 15 designates a tubing which extends transversely under the track at the switch-stand and which serves as a protector and guideway for the flexible rod or cable 16, joined at one end with the crank member 17^a of the rocker-post 17, which in turn is connected with the throw-lever of the switch mechanism. The cable 16 is suitably guided alongside of the trackway in any well-known manner.

To prevent too-sudden shocks or jars of the signal devices when the switch is set and also to provide for contraction and expansion of the operating cable or rod 16, the end 16^x of the said cable is passed under a guide-roller 18 in the signal box or housing and connects with a stout coil-spring 19, which connects with the lower end of the signal-actuating lever member. By thus connecting the actuating rod or cable 16 the swinging action of the signal devices will be easy, positive, and uniform in either hot or cold weather.

Under normal conditions—that is, when switch is closed—the signal member is down to the position shown in Fig. 2 and forms, as it were, a part of the top of the housing, it being understood during the said adjustment of the parts mentioned the semaphore or indicator on the switch-stand will indicate “safety”—switch closed. When the switch is opened by shifting the switch-governing bar or member in the usual manner, said switch-signal will shift to a danger position, and during the setting of the switch the signal devices in the housing 1 through the medium of the rod or bar 16 will be actuated, and the several toggle or signal-actuating levers will be swung into the vertical plane shown in Fig. 3, and in so doing the signal-board or detachable top section of the housing will be lifted to the position shown in said Fig. 3. By reason of the curved slotway for the changing fulcrum of the central toggle or signal-actuating levers the several levers will be caused to positively assume their proper vertical position, to which they will be held by locking the switch-throw mechanism to its set position, the said levers being also sustained in their proper position by engaging a stop J within the housing, as shown. When the switch mechanism is again shifted to close the switch, the action of the counterweights or retractile springs will return the several levers to their collapsed position and return the signal within the signal-box out of sight and protected from

the weather. Instead of placing a light or other indicator on top of the liftable housing-section it is obvious the signal-head to which said top is secured may be equipped with a lantern or other danger-indicator means.

From the foregoing, taken in connection with the accompanying drawings, the advantages of my invention will be apparent. It will be noticed the signal devices when at a normal or safety position are at once held from view and housed and their construction such as to provide a simple, durable, and reliable signaling mechanism requiring *per se* no special attention, the adjustment thereof being governed by the means utilized for shifting the switch.

While the generic arrangement of parts as illustrated presents a preferred construction thereof, the details may be modified or varied without departing from my invention or the scope of the appended claims.

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

1. The combination with the switch-throwing mechanism; a signaling means, comprising a housing including a removable top section, a signal-head secured thereto and movable therewith, devices for normally holding the said top section to a closed position and the signal-head within the housing, and connections joining the said signal-head with the switch-throwing mechanism, and adapted to raise the said head with the detachable top section when the switch is shifted to its open position, substantially as shown and for the purposes described.

2. The combination with the switch-throwing mechanism; a signal, comprising a housing, a signal-head, means for normally holding the head within the housing and for returning it to its normal position, and flexible connections joining the said head with the switch-throwing mechanism, adapted to extend the head up above the housing when the switch is moved to an open position, as set forth.

3. The combination with the vertically-movable signal, a switch-throwing mechanism, a series of extensible levers connected with the vertically-movable signal, means for normally folding the said levers, whereby to lower the signal, and connections joining the said levers with the switch-throwing mechanism, adapted when the switch is moved to an open position to extend the levers and elevate the signal, substantially as shown and described.

4. The combination with the switch-throwing mechanism; of a signal, comprising a housing, a signal inclosed therein and movable vertically above the housing, means for actuating said signal held within the housing, said means including devices for automatically returning the signal to a point below the housing-top, and intermediate mechanism

joining the signal-actuating means with the throw-bar, substantially as shown and for the purposes described.

5 A signal mechanism for the purposes described, comprising a housing, a signal-head normally held within the housing, and adapted to move vertically above the said housing, an actuating means for the signal within the housing, said means including a series of
10 toggle-levers connected with each other and fulcrumed relatively to each other to extend in a vertical plane, means for normally adjusting the said levers at an angle to each other, and devices operable without the casing for moving the said levers to a vertically-extended position, for the purposes described.
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6. In a signal mechanism of the character described, the combination of the housing, said housing including a detachable top section, a signal-head secured thereto, said head having a pendent lever member, slotted longitudinally, a fixed fulcrum in the housing for engaging the slot in the said lever, a
20 second lever pivoted in the housing with its fulcrum in the vertical plane of the fulcrum for the first-mentioned lever, an intermediate lever pivotally joined to the adjacent ends of the other levers, a changeable fulcrum for the intermediate lever, automatically-operated
25 means for normally pulling the said levers out of a vertical plane with each other, and

manually-operated mechanism for extending the said levers in a vertical plane with each other, for the purposes specified.

7. In a signal mechanism, as described, the
35 combination with the casing, said casing including a removable top section, a signal-head secured to said top section, and movable therewith, said head having a longitudinal slotted pendent shank, a fixed fulcrum in
40 the casing for engaging the slot of said shank, a second lever fulcrumed in the vertical plane of the fixed fulcrum for the first lever, an intermediate lever pivotally connected with the adjacent ends of the two other levers, a curved
45 slotway in the casing, said slot terminating in the vertical plane of the fulcrum of the two first-named levers, a fulcrum carried by the intermediate lever, and movable in the
50 said curved slot, a counterpoise engaging the said levers for automatically holding the levers out of a vertical alinement with each other, and a pull member connected to the lowermost one of the levers at a point below
55 its fulcrum, said pull member being extended outside of the casing, all being arranged substantially as shown and for the purposes described.

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Witnesses:

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