C. A. ALDEN.

RAILROAD SWITCH STAND.

APPLICATION FILED NOV. 22, 1911.

1,050,416.

Patented Jan. 14, 1913.

2 SHEETS—SHEET 1.

Fig. 1.

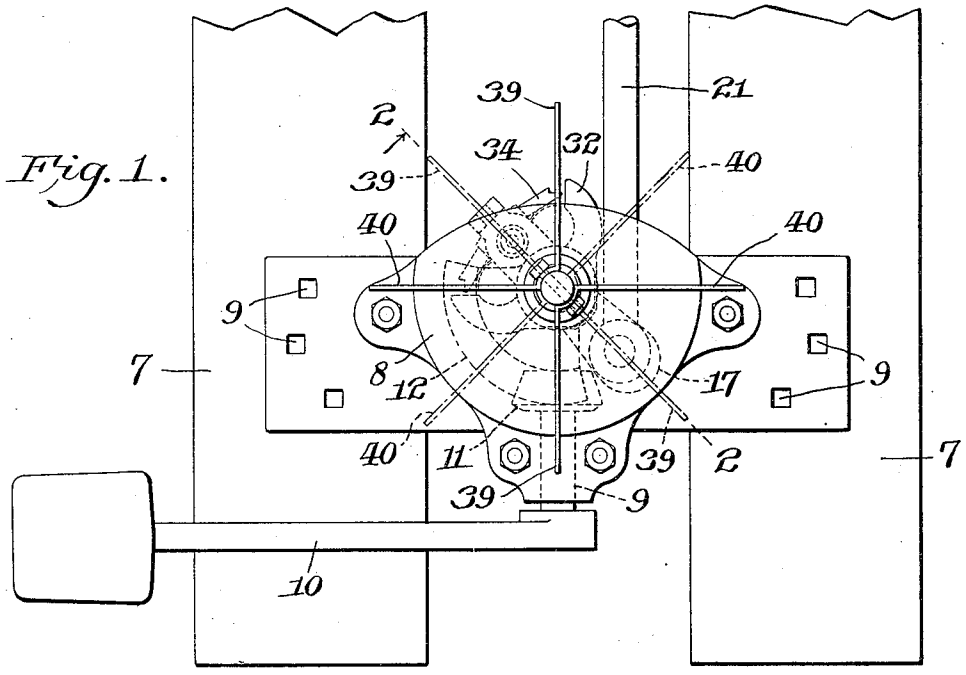


Fig. 5.

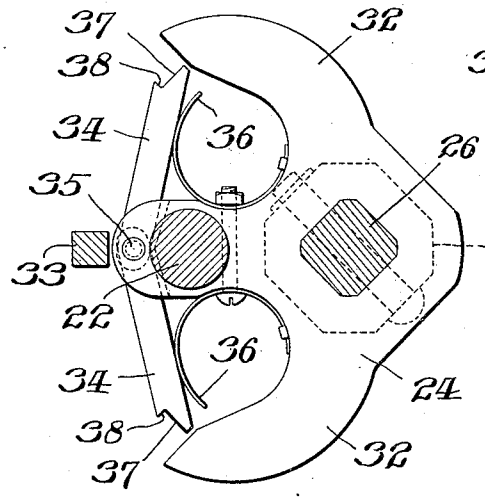


Fig. 3.

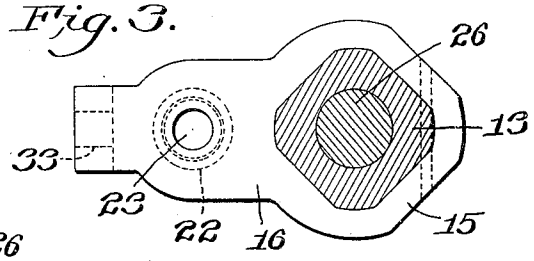
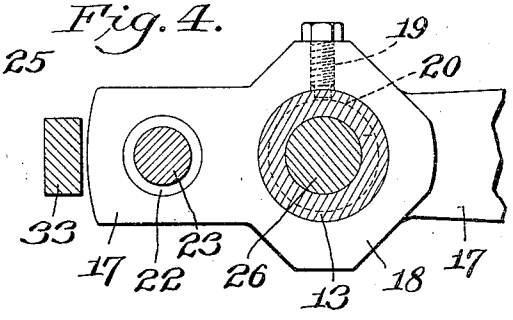


Fig. 4.



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2 SHEETS—SHEET 2.

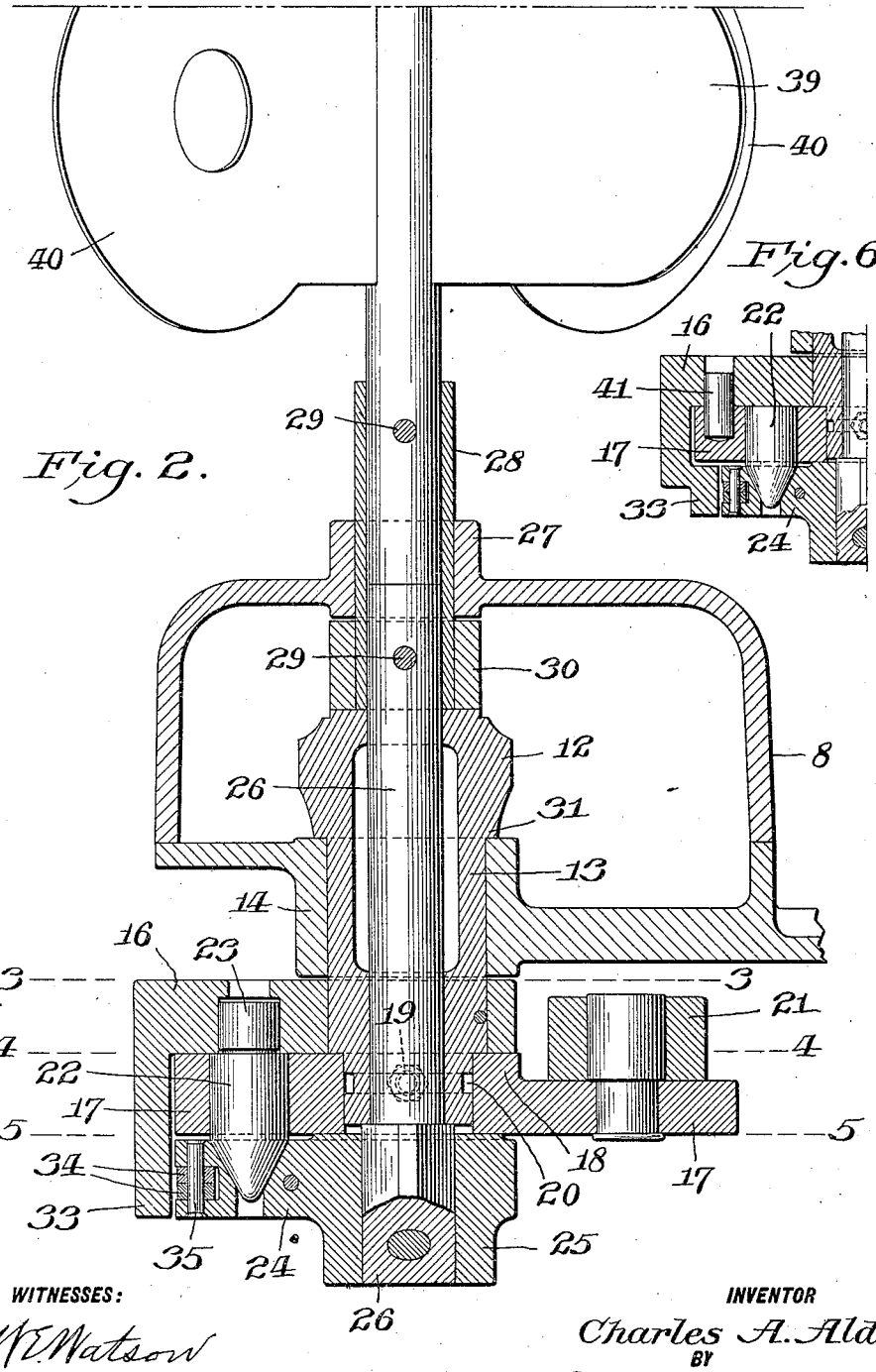

Fig. 6.

Fig. 2.

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RAILROAD-SWITCH STAND.

1,050,416. Specification of Letters Patent. Patented Jan. 14, 1913.

Application filed November 22, 1911. Serial No. 661,667.

To all whom it may concern:

Be it known that I, CHARLES A. ALDEN, a citizen of the United States, residing at Steelton, in the county of Dauphin and State of Pennsylvania, have invented certain new and useful Improvements in Railroad-Switch Stands, of which the following is a specification.

Railroad switch-stands in general use are provided with devices adapted to be operated to open and close a switch and, at the same time, set a signal in proper position to indicate the position of the switch; and such switch-stands are also provided with means to hold the switch and signal in either of two set positions with the switch open or closed and the signal indicating the same.

When a switch has been set in one of its two positions to properly receive wheels passing over the track in one direction and the switch is run through in the opposite direction, a part or parts of the mechanism are broken and the signal is thrown to an uncertain position.

The object of my invention is to provide a novel, simple and efficient means whereby, when a switch is run through in the opposite direction from which it is set, the signal will be moved to and retained in a definite, predetermined position, indicating that the switch is in a disabled condition.

With this object in view, the invention consists in the novel combinations and characteristic features of construction hereinafter fully described and particularly claimed.

In the accompanying drawings, illustrating my invention: Figure 1, is a plan view of a switch-stand and adjuncts, showing one form of embodiment of my invention. Fig. 2, is a vertical section, on line 2—2 of Fig. 1. Fig. 3, is a horizontal section, on line 3—3 of Fig. 2. Fig. 4, is a horizontal section, on line 4—4 of Fig. 2. Fig. 5, is a horizontal section, on line 5—5 of Fig. 2. Fig. 6, is a vertical section showing a modification of the breakable connections.

Referring to the drawings, 7 designates the end portions of two adjacent railroad cross ties. Mounted upon these cross ties 7 is the usual two-part frame or casing 8 of a switch-stand, the base portion of which is provided with suitable spike holes through which spikes may be driven to secure the frame 8 to the ties.

The frame 8 has mounted therein a horizontal shaft 9 the outer end of which is provided with the usual weighted operating lever 10. Secured to the inner end of the shaft 9 is the usual beveled gear 11 the teeth of which co-act with the usual beveled, toothed sector 12. This sector 12 is arranged within the casing 8 and projects from a vertical sleeve 13 which is mounted to turn in a bearing 14 formed in the bottom of the frame or casing 8. The parts are constructed so that when the lever 10 is moved from side to side of the frame 8 to turn the shaft 9 a half revolution, the sleeve 13 will be moved a quarter turn.

The sleeve 13 projects below the bottom of the bearing 14 and the part of the sleeve 13 directly beneath the bearing 14 extends into and is secured to the hub 15 of a switch and signal operating arm or member 16 which extends horizontally from the sleeve 13. Directly beneath the member 16 is a horizontally-arranged switch-operating part or lever 17, the hub 18 of which is mounted to turn loosely about the axis of the sleeve 13 on the lower reduced end thereof, axial movement of the hub 18 being prevented by a screw 19 screwed into the hub 18 and having its inner end extending into a circumferential groove 20 in the sleeve 13.

One end of the lever or part 17 is pivoted to the usual switch operating rod 21, and the other end of the lever 17 is connected to the member 16 by a pin 22. The body of the pin 22 extends through the lever 17 and the upper reduced end 23 of the pin 22 is frangibly connected to the body thereof and extends into a socket formed in the member 16, whereby the pin 22 will normally cause the member 16 and switch-operating part to move together to open and close the switch when the lever 10 is moved from side to side, and whereby the upper end 23 of the pin 22 may be broken or sheared from the main body thereof on the line 4—4 under the forceful movement of the switch-operating part 17 when the member 16 is held in one of its two set positions by the weighted lever 10 extending horizontally from one side or the other of the shaft 9.

Directly beneath the switch-operating part 17 is a horizontally-extending signal-operating part or arm 24, the hub 25 of which is secured to the lower end of the signal or target shaft 26 which extends upwardly through and is rotatably mounted

in the sleeve 13 and a bearing 27 in the top of the casing 8. The shaft 26 is made in two parts which are secured together by a surrounding sleeve 28 and transverse pins 29 extending therethrough. The sleeve 28 and a surrounding collar 30 rests upon the top of the sleeve 13 and supports the shaft 26 and arm 24, the sleeve 13 has a shouldered portion 31 resting upon the top of the bearing 14 to support the sleeve 13 and the switch-operating part 17 is supported upon the hub 25 of the arm 24, the screw 19 being provided for convenience in assembling the parts.

The pin 22 projects below the bottom of the lever 17, and the projecting lower end of the pin 22 is tapered or beveled and rests within a tapered or beveled socket in the subjacent arm 24. The body of the pin 22 is slidably fitted to the lever 17 and the pin is normally held against vertical displacement by the engagement of the upper portion of the pin with the member 16, thereby causing the signal-operating member 24 to move with the switch-operating lever 17, until the pin 22 operates to break the connection between the switch-operating part 17 and the signal-operating part 24, as will be hereinafter explained.

The signal-operating part 24 is provided with lateral projections 32, one being located on one side and the other being located on the other side of the lower end of an arm 33 which projects rigidly and downwardly from the member 16. This arm 33 forms an abutment against which either of the projections 32 are adapted to strike to limit the movement of the arm 24 when it is moved relatively to the member 16 about the axis of the shaft 26, one-eighth of a turn in either direction from the position shown in the drawings.

The free end of the arm 24 carries a pair of horizontally-arranged latch arms 34, the meeting ends of which overlap each other and are pivoted on a vertical pin 35 in the arm 24. The arms 34 are pressed outwardly to the positions shown in the drawings by the outer ends of flat springs 36 having their inner ends secured to the arm 24. The free ends of the latch arms 34 extend to positions adjacent the free ends of the projections 32, and the free ends of the arms 34 are provided with notches 37 which are so arranged with relation to the projections 32 that when the signal-operating part or arm 24 is moved relatively to the member 16 one-eighth of a turn about the axis of the shaft 26, one of the projections 32 will engage one side of the abutment 33, and the adjacent notch 37 will engage the other side of the abutment 33, thereby preventing further movement of the arm 24 in either direction and locking it to the abutment 33. When one of the projections 32 is moved into engagement with the abutment 33, the adjacent latch arm 34 engages the abutment and is thereby pressed inwardly against the action of its spring 36 until the shouldered portion 38 of the notch 37 escapes the abutment 33, whereupon the shouldered portion 38 is pressed outwardly into position to engage one side of the abutment 33 immediately after the projection engages the other side of the abutment and stops the movement of the arm 24.

The operation is as follows: When the parts are in the positions shown in the drawings and the rod 21 is connected to a switch, the switch is held in one of its two positions, opened or closed, by the weighted lever 10 resting on one side of the shaft 9; the member 16, the lever 17 and arm 24 being connected together by the pin 22. In this position of the parts, the wings 39 of the signal carried by the shaft 26 extend at right angles to the track or substantially so and indicate the position of the switch while the wings 40 of the signal extend parallel to the track or substantially so. When it is desired to reverse the switch, or move it to the other of its two positions, the weighted lever 10 is moved to the other side of the shaft 9, thereby moving the member 16, the lever 17, the arm 24, the shaft 26 and signal thereon a quarter turn about the axis of the shaft 26 and causing the lever 17 to shift the switch to its other position, in which it is held by the weighted arm 10 resting on the side of the shaft 9 to which it was moved. The position to which the switch was moved is now indicated by the signal wings 40 which now extend at right angles to the track, or substantially so, while the wings 39 now extend parallel to the track, or substantially so. It will thus be seen that by moving the lever 10 from side to side of the shaft 9, the switch may be opened and closed and that the signal will be operated to indicate the position of the switch. When the switch is run through in the opposite direction from which it is set and held by the weighted lever 10, the car wheels force the switch and its rod 21 in a manner to turn the lever 17 while the weighted arm 10 and its connections hold the member 16 against movement by the lever 17. This operation causes the upper portion 23 of the pin 22 to be broken or sheared from the body of the pin, thereby breaking the connection between the lever 17 and member 16. The turning of the lever 17 under the influence of the car wheels brings one of the projections 32 and latches 34 into engagement with the abutment 33 and arrests the movement of signal-operating arm 24 by the lever 17, after the top of the sheared pin 22 moves from beneath the member 16. During the continued movement of the lever 17 the tapered or beveled lower end of the pin 22,

engaging the beveled wall of the socket in the arm 24, is forced upwardly from engagement with the arm, thus breaking the connection between the lever 17 and the arm 24. The movement of the arm 24 and therewith the signal is stopped by the projection 32 and latch 34 after the signal has been moved one-eighth of a turn to a predetermined position, indicated by dot-and-dash lines in Fig. 1. This predetermined set position of the signal, intermediate its two positions indicating that the switch is open or closed, indicates to those concerned that the switch has been run through and disabled.

In Fig. 6, I have shown a modification in which the upper end 23 of the pin 22 is omitted, and in lieu thereof a pin 41 is employed which extends between the part 16 and lever 17 and forms a breakable connection between the same, the pin 41 being adapted to be sheared or broken when the lever 17 is forcibly moved relatively to the part 16 as previously described. In this modification there is no connection between the pin 22 and the part 16, and in all other respects the pin 22 operates as previously described.

I claim:

1. In a switch-stand, the combination of a frame, a switch operating part, a signal operating part, connecting means for said parts normally causing them to move together and permitting movement of said parts relative to each other and normally causing them to move together, and means coöperative to hold the signal operating part independently of the switch operating part, whereby when the last named means holds the signal operating part, said connecting means will permit the switch operating part to move relative to the signal operating part.

2. In a switch-stand, the combination of a frame, a switch operating part, a signal operating part, an operating member movable to either of two set positions, means for holding said member in one of said positions, a breakable connection between said member and said switch operating part, connecting means for said parts, said connecting means permitting movement of said parts relative to each other upon the breaking of said connection, and means controlled by said member after the breaking of said connection for holding the signal operating part when said part reaches a position intermediate said two set positions, whereby when said member is held in one of said set positions the movement of the switch operating part will break said connection and thereafter move relative to the signal operating part, leaving the signal operating part in said intermediate position.

3. In a switch-stand, the combination of a frame, a switch operating part, a signal operating part, connecting means for said parts normally causing them to move together when moved to either of two set positions said connecting means permitting movement of said parts relative to each other, said connecting means comprising a pin extending between and engaged with said parts and having a beveled end engaging a beveled face of one of said parts, and means operative to engage and hold the signal operating part when it reaches a position intermediate said two set positions, whereby when the last named means holds the signal operating part in the intermediate position, said pin will permit the switch operating part to move relative to the signal operating part.

4. In a switch-stand, the combination of a frame, a switch operating part, a signal operating part, connecting means for said parts normally causing them to move together when moved to either of two set positions said connecting means permitting movement of said parts relative to each other, an abutment provided with means for holding it in a set position, and a latch device arranged to engage said abutment and hold the signal operating part when it reaches a position intermediate said two set positions, whereby when the abutment is in its set position the latch device will engage the abutment and hold the signal operating part in the intermediate position and permit the signal operating part to move relative to the switch operating part.

5. In a switch-stand, the combination of a frame, a switch operating part, a signal operating part, connecting means for said parts normally causing them to move together when moved to either of two set positions, said connecting means permitting movement of said parts relative to each other, said connecting means including a pin extending between and engaged with said parts, an abutment provided with means for holding it in a set position, and a latch device arranged to engage said abutment and hold the signal operating part when it reaches a position intermediate said two set positions, whereby when the abutment is in its said set position the latch device will engage the abutment and hold the signal operating part when it reaches the intermediate position and permit the signal operating part to move relative to the switch operating part.

6. In a switch-stand, the combination of a frame, a switch operating part, a signal operating part, connecting means for said parts normally causing them to move together when moved to either of two set positions, said connecting means permitting movement of said parts relative to each other, said connecting means comprising a pin extending between and engaged with said parts and having a beveled end engaging a beveled face of one of said parts,

an abutment provided with means for holding it in a set position, and a latch device arranged to engage said abutment and hold the signal operating part when it reaches a position intermediate said two set positions, whereby when the abutment is in its said set position the latch device will engage the abutment and hold the signal operating part in the intermediate position and permit the signal operating part to move relative to the switch operating part.

7. In a switch-stand, the combination of a frame, a switch operating part, a signal operating part, an operating member movable to either of two set positions, means for holding said member in one of said positions, a breakable connection between said member and said switch operating part, connecting means for said parts, said connecting means permitting movement of said parts relative to each other upon the breaking of said connection, an abutment carried by said member, and a latch device arranged to engage said abutment and hold the signal operating part when it reaches a position intermediate said two set positions, whereby when said member is held in one of said set positions, the movement of the switch operating part will break said connection and thereafter engage the latch device with the abutment and permit relative movement between said parts leaving the signal operating part in said intermediate position.

8. In a switch-stand, the combination of a frame, a switch operating part, a signal operating part, an operating member movable to either of two set positions, means for holding said member in one of said positions, a breakable pin connecting said member and said switch operating part, connecting means for said parts, said connecting means permitting movement of said parts relative to each other upon the breaking of said pin, an abutment carried by said member, and a latch device arranged to engage said abutment and hold the signal operating part when it reaches a position intermediate said two set positions, whereby when said member is held in one of said set positions, the movement of the switch operating part will first break said pin and thereafter engage the latch device with the abutment and permit relative movement between said parts, leaving the signal operating part in said intermediate position.

9. In a switch-stand, the combination of a frame, a switch operating part, a signal operating part, an operating member movable to either of two set positions, means for holding said member in one of said positions, a breakable pin connecting said member and said switch operating part, connecting means for said parts, said connecting means permitting movement of said parts relative to each other upon the breaking of said pin, said connecting means comprising a pin extending between and engaged with said parts and having a beveled end engaging a beveled face of one of said parts, an abutment carried by said member, and a latch device arranged to engage said abutment and hold the signal operating part when it reaches a position intermediate said two set positions, whereby when said member is held in one of said set positions the movement of the switch operating part will first break said pin and thereafter engage the latch device with the abutment and permit relative movement between said parts, leaving the signal operating part in said intermediate position.

10. A signal for a switch stand comprising an operating member, a switch operating part, a breakable connection between the member and the operating part, a signal operating part, means for connecting said parts, said means permitting movement of the parts relative to each other upon the breaking of said connection, and means for limiting the relative movement of the operating member and the signal operating part.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES A. ALDEN.

Witnesses:
C. A. LANGDON,
ALLEN W. ELLENBERGER.