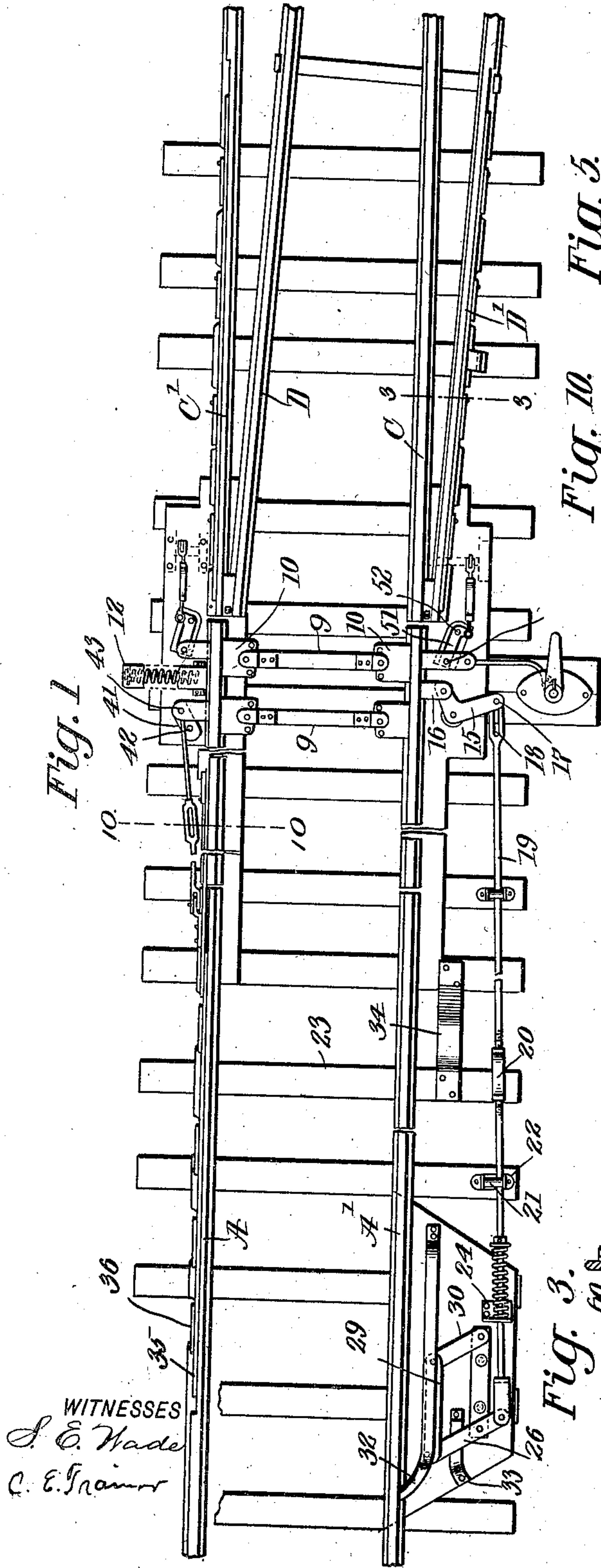


I. A. CALL.  
 AUTOMATIC RAILROAD SWITCH.  
 APPLICATION FILED SEPT. 1, 1908.

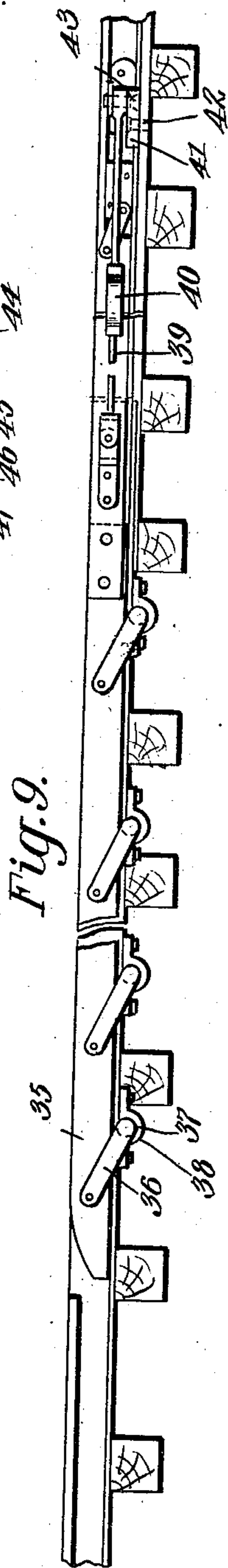
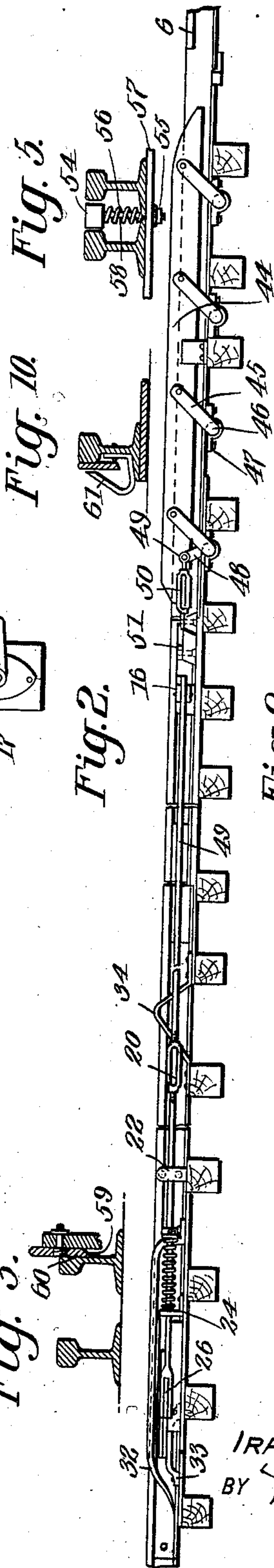
928,738.

Patented July 20, 1909.

2 SHEETS—SHEET 1.



WITNESSES  
 S. E. Wade  
 C. E. Grooms



INVENTOR  
 IRA A. CALL,  
 BY *Munn & Co.*  
 ATTORNEYS

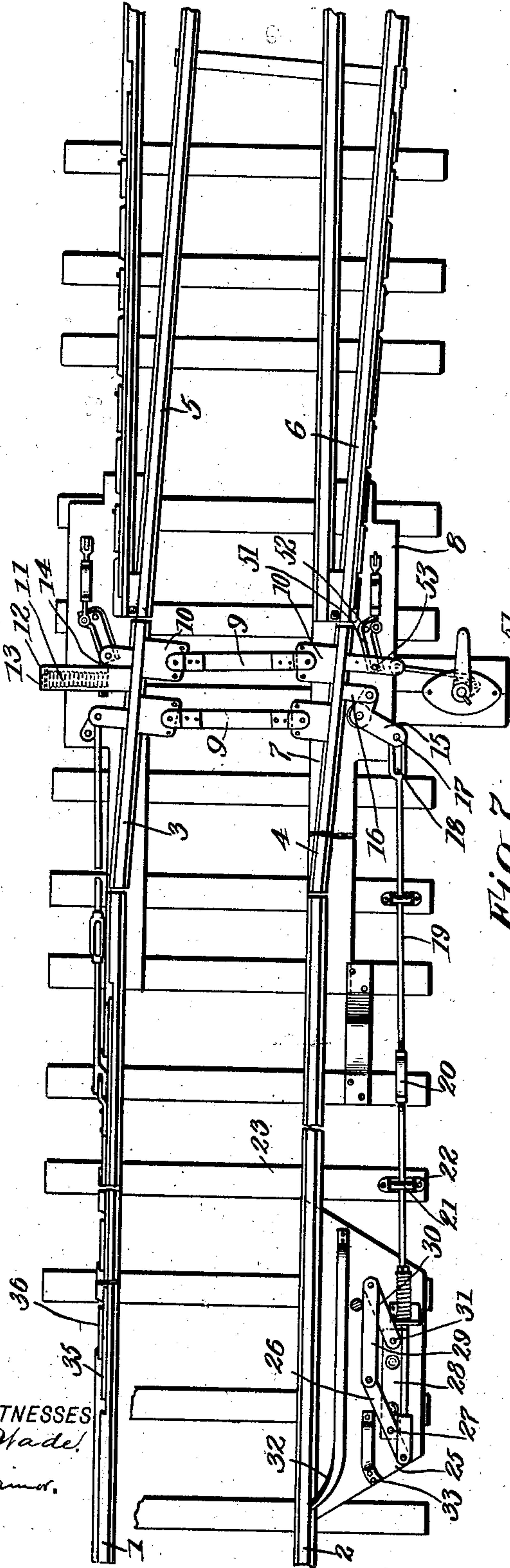
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2 SHEETS—SHEET 2.

Fig. 6.



WITNESSES  
S. E. Wade  
C. E. Hamer.

Fig. 7.

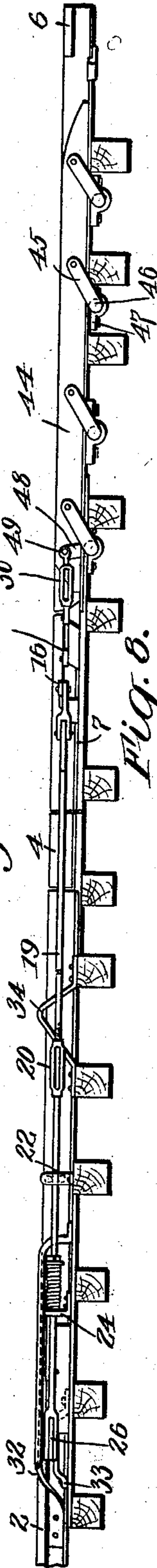


Fig. 8.

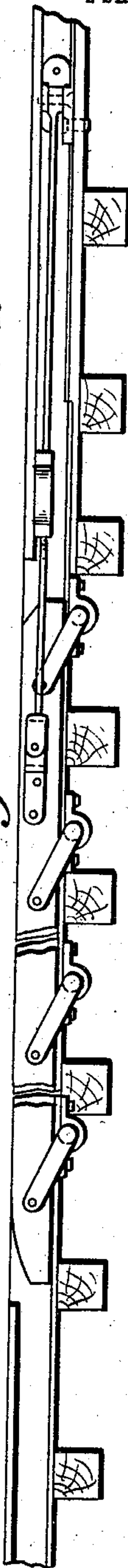
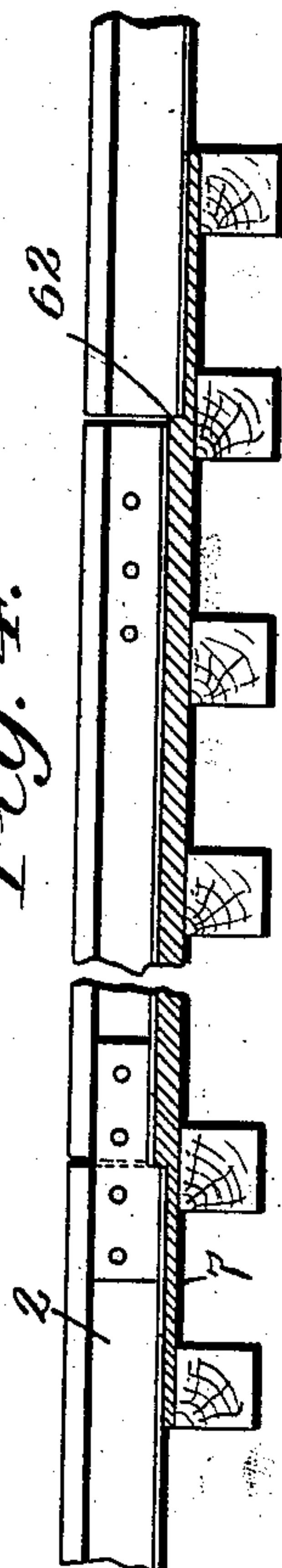


Fig. 9.



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# UNITED STATES PATENT OFFICE.

IRA A. CALL, OF SALT LAKE CITY, UTAH.

## AUTOMATIC RAILROAD-SWITCH.

No. 928,738.

Specification of Letters Patent.

Patented July 20, 1909.

Application filed September 1, 1908. Serial No. 451,189.

*To all whom it may concern:*

Be it known that I, IRA A. CALL, a citizen of the United States, and a resident of Salt Lake City, in the county of Salt Lake and State of Utah, have invented certain new and useful Improvements in Automatic Railroad-Switches, of which the following is a specification.

My invention is an improvement in automatic railroad switches, and consists in certain novel constructions and combinations of parts hereinafter described and claimed.

The present invention is an improvement over my prior patent No. 886,941, granted May 5th, 1908, and the object of the invention is to provide a switch which may be operated from the train or engine while the same is in motion, or by hand in the usual manner, and a switch of the stub rail type which will not be liable to clog from snow, dirt or other causes, nor from contraction or expansion of the rails at the switch.

A further object of the invention is to provide a device wherein the operating mechanism is above ground, or on a level with the track, and therefore not subject to the disadvantages incident to underground or sunken parts.

A further object of the invention is to provide a mechanism wherein the component parts thereof are connected to plates of steel underlying the switch rails, so that no part of the switch is in any way attached to the ties to become inoperative through movement thereof, the ties serving merely to hold the switch on a level and in line with the rest of the track.

A further object of the invention is to provide a device that will eliminate unnecessary stops, and normally maintain the switches in main line position.

A further object of the invention is to provide a mechanism wherein the component parts thereof are so effectively arranged as to afford absolute safety in the passage of trains, any way desired over the switches.

Referring to the drawings forming a part thereof—Figure 1 is a plan view of the improvement. Fig. 2 is a side elevation of the switch. Fig. 3 is a section on the line 3—3 of Fig. 1. Fig. 4 is a detail in vertical and longitudinal section, of the supporting plate and rail ends. Fig. 5 is an end elevation of the rails at the junction of the siding rail with the main line rail. Fig. 6 is a plan view showing the switch set for the siding. Fig.

7 is a side elevation of Fig. 6. Fig. 8 is a side elevation of the safety locking device. Fig. 9 is another view of the same, and Fig. 10 is a section on the line 10—10 of Fig. 1.

In the present embodiment of my invention, the main line rails 1, 2, having interposed in the lengths thereof, the stub switch rails 3, 4, which are adapted to complete the main line track or to connect it with the siding rails, 5, 6 as may be desired. Beneath each switch rail is a plate 7 resting upon the ties, the ends of which extend beneath the separated ends of the main line rails, and beneath the ends of the siding rails, the said plates being widened as at 8, adjacent to the switch rails for the operating levers or mechanism. The switch rails are connected together in spaced relation by means of links 9, whose ends are pivoted to lugs 10 connected with each rail, and the switch is retained normally in position for the main line by means of a spring 11 arranged within a casing 12, which is connected with one of the switch rails. A bolt 13 is connected with the adjacent switch rail, and moves within the spring, the free end thereof being headed, and the spring is arranged between the head and a fixed bracket 14 on the plate, as will be evident from an inspection of Figs. 1 and 6.

An elbow lever 15 is journaled upon the plate 7, on the opposite side of the track from the spring 11, and one arm of the lever is connected to a lug 16, rigid with the adjacent switch rail, the other end being provided with a pin 17, in engagement with a slot 18, in a link 19, which connects the switch with the operating mechanism to be presently described. A turn buckle 20 is interposed in the length of the link, and the said link is supported by rollers 21 journaled in brackets 22 secured to the ties 23.

The link 19 extends through a bearing 24 on a plate 25 secured to the rail, and is connected with one end of a lever 26, pivoted as at 27, on a rib 28 on the plate, the other end of the lever being connected with one end of a bar 29, whose other end is connected with a link 30, pivoted as at 31 on the rib, the said link acting to retain the bar 29 in parallelism with the link 19.

The plate 25 is provided with guides 32, 33 for the trip mechanism which is mounted on the engine or car as the case may be. The trip mechanism may consist of a simple shaft retained in closed position by a coiled spring with suitable connections to the engineer or



operator to pull the shaft down through the coiled spring when it is desired to take the siding.

When the switch is set for the main line as shown in Fig. 1, the bar 29 is in the position shown in such figure. When the trip engages the lever 26, the lever is moved into the position shown in Fig. 6, thus swinging the elbow lever 15, into the position shown in Fig. 6, and moves the switch against the resistance of the spring 11, into the position also shown in such figure. To insure the rising of the trip, whereby to prevent injury to the switch mechanism, a cam 34 is arranged in front of the plate 25, for engaging and elevating the trip. It will be understood, that immediately the lever 26 is released by the trip, the spring 11 acts to return the switch to main line position, for which reason it is necessary to provide a locking mechanism for retaining it in the siding position until the train or car shall be in the clear. The locking device comprises a side rail 35, supported on arms 36 rigid with shafts 37, journaled in brackets 38, beneath the rail 1, and the side rail is connected by a link 39 having interposed in the length thereof, a turn buckle 40, with a lever 41 pivoted as at 42 to the plate 7, and to a lug 43 connected with the adjacent switch rail, the connection between the link and the lever being a pin and slot or lost motion connection. It will be evident from the description, that when the switch is thrown in either the position shown in Fig. 1, or that shown in Fig. 6, and the side rail 35 is depressed into the position shown in Fig. 9, the switch will be locked as long as the side rail is depressed. The side rail is made long enough so that it is never free from at least one truck during the passage of the train thereover. Similar side rails 44 are pivoted adjacent to one of the siding rails, and one of the main line rails on the trailing side of the switch, the said siding rails being supported by arms 45 rigid with shafts 46 journaled in bearings 47 to the rail, one of the shafts being provided with a second crank arm 48, connected by a link 49 having interposed therein a turn buckle 50, with an elbow lever 51, pivoted as at 52 on the plate 7, the other arm being connected with a lug 53 on the adjacent switch rail. It will be observed from an inspection of Figs. 1, and 6, that the elbow levers 51 connected to opposite sides of the switch, and to one of which the side rail on the main line, and to the other the side rail, on the siding line is connected, are oppositely arranged, the siding rail on the main line locking the switch for the main line, and the side rail on the siding line locking the switch for the siding, as well as operating the switch when necessity requires it.

Between the ends of the siding rails and the main line rails, adjacent to the ends of

the stub switch rails, is arranged a plate 54 which normally fills the space between said rail ends as shown in Fig. 5, and a bolt 55 is connected with the plate and extends through the plate 7, the free end thereof being provided with a nut 57 for limiting the movement of the plate upwardly, and a coil spring 58 is arranged between the plate 54 and the bases of the adjacent rails. The plate is designed to prevent material such as bolts or spikes from becoming lodged between the ends of the siding rails and the main line rails, which would prevent the operation of the stub rails in case such object projected into the path of movement thereof.

The construction of the plate 7 shown in Fig. 4 is such that it forms a connecting link with all the rail ends, a support for all the operating mechanism required to operate an automatic switch, effecting an elevated solid smooth surface over which is operated the switch rails elbow arms etc., and further prevents interference with the free movement of the switch by expansion of the rail. The portion of the plates 7 beneath the switch rails 3 and 4 is of greater thickness than the portion between the ends of the main line and siding rails, and a shoulder 62 is formed between the said thick and said thin portions against which the ends of the siding rails and main line rails abut as clearly shown in Fig. 4. The said rails being rigidly affixed to said thin portions of the plate prevents derangement through contraction. However, this may be used without this shoulder in places where bolts will have sufficient strength to check expansion at the switch.

The spacing links 9, coming in contact with plates 7, prove a stop block which determines the side movement of the switch rails.

The hand operating device, to prevent being tampered with, normally remains locked, except when necessary to throw the switch by hand, but in its locked position does not prevent the switch being operated automatically by the trains.

It will be understood that any suitable connection may be used from the bell crank 51 to the side rails.

It will be noticed from an inspection of Fig. 3 that the lower edge 60 of the side rails is beveled as at 59, in order that the said rails will cut down through snow or other material without becoming clogged.

I claim:

1. In a device of the class described, the combination with the stub switch rails and the switch bar connecting the same, of a spring for normally retaining said rails in alinement with the main line, plates arranged beneath the rails, an elbow lever journaled on one of the plates, and having



one of its arms connected with the adjacent rail, a link having a lost motion connection with the other arm, a lever pivoted at a distance from the switch and having one arm connected with the link, the other arm being adapted to be engaged by a trip on a moving train for operating the switch; manually operated means for throwing the switch, and means for locking the switch comprising side rails arranged on opposite sides of the switch, and attached to specially constructed rails, means for mounting said rails, whereby they will be depressed and moved longitudinally by the moving train, levers pivoted by one end on the plates adjacent to the switch rails, the other ends of the levers being pivotally connected with the switch rails, and links connecting the side rails with the respective levers.

2. In a device of the class described, the combination with the sub-switch rails, of a spring for normally retaining said rails in alinement with the main line, plates arranged beneath the switch rails and the abutting ends of the main line and siding rails, an elbow lever journaled on one of the plates, and having one of its arms connected with the adjacent rail, a link having a lost motion connection with the other arm, a lever pivoted at a distance from the switch, and having one arm connected with the link, the other arm being adapted to be engaged by a trip on a moving train for operating the switch, manually operated means for throwing the switch independently of the moving train operating means, and means arranged on opposite sides of the switch for locking the switch in its thrown position during the passage of a train thereover.

3. In a device of the class described, the combination with the stub switch rails, of means whereby a moving train may operate said rails, a spring for normally retaining said rails in alinement with the main line rails, manually operated means for operating the switch independently of the train operated means, and side rails for engagement by the moving train to lock the switch in its thrown position during the passage of the train thereover.

4. In a device of the class described, the combination with the stub switch rails, and the switch bar connecting the same, of a

spring normally retaining said rails in alinement with the main line rails, and means for operating said rails from a moving train, comprising a plate secured to the rail at a distance from the switch, a pair of levers pivoted on the plate, a link connecting one end of each of said levers, an elbow lever journaled adjacent to the switch, and having one arm connected with the rails, one of said levers remote from the switch being extended and a link connecting said extended end with the other arm of the elbow lever adjacent to the switch.

5. In a device of the class described, the combination with the stub switch rails, of a spring for retaining said rails normally in alinement with the main line rails, means for operating said rails from a moving train, said means comprising a plate secured to the rail at a distance from the switch, a pair of levers pivoted on the plate, a link connecting one end of each of said levers, an elbow lever journaled adjacent to the switch, and having one arm connected with the rails and a connection between the other arm of the elbow lever and one of said levers remote from the switch.

6. In a device of the class described, the combination with the stub switch rails, of means whereby a moving train may operate said rails, a spring normally retaining the rails in alinement with the main line rails, and side rails for engagement by the moving train to lock the switch in its thrown position, during the passage of a train thereover, said side rails having beveled lower edges for the purpose set forth.

7. In a device of the class described, the combination with the stub switch rails, of means whereby a moving train may operate said rails, a spring normally retaining the rails in alinement with the main line rails, and side rails for engagement by the moving train to lock the switch in its thrown position, during the passage of a train thereover, said rails having a portion of the tread thereof cut away to receive the side rails, said side rails having beveled lower edges for the purpose set forth.

IRA A. CALL.

Witnesses:

LEIGH S. STEUART,  
O. C. WHITE.