

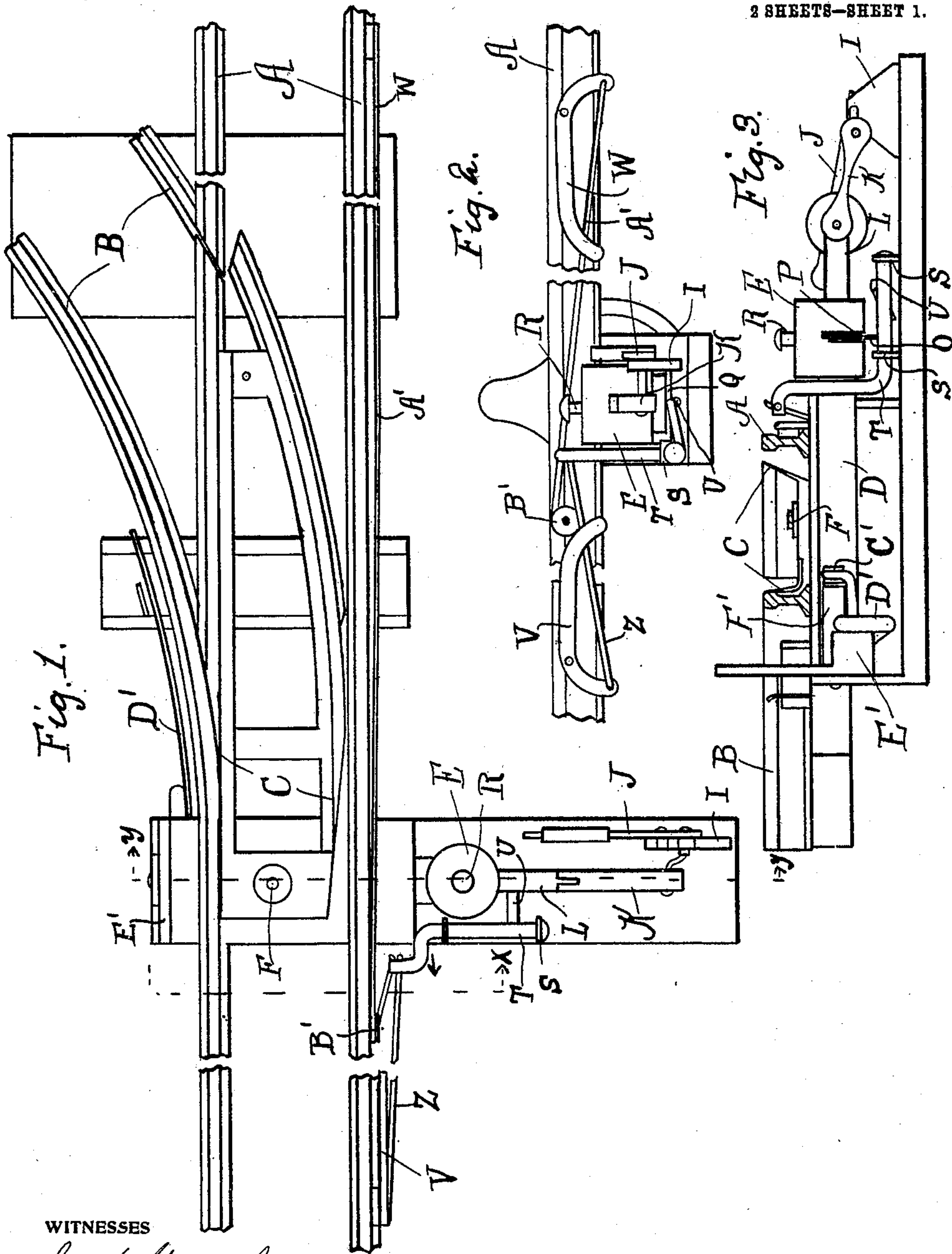
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SAFETY SWITCH.

APPLICATION FILED SEPT. 19, 1908.

Patented June 15, 1909.

925,395.

2 SHEETS—SHEET 1.



WITNESSES

*S. M. Gallagher.*  
*E. N. Schofield*

INVENTOR

*Frederick Smith*

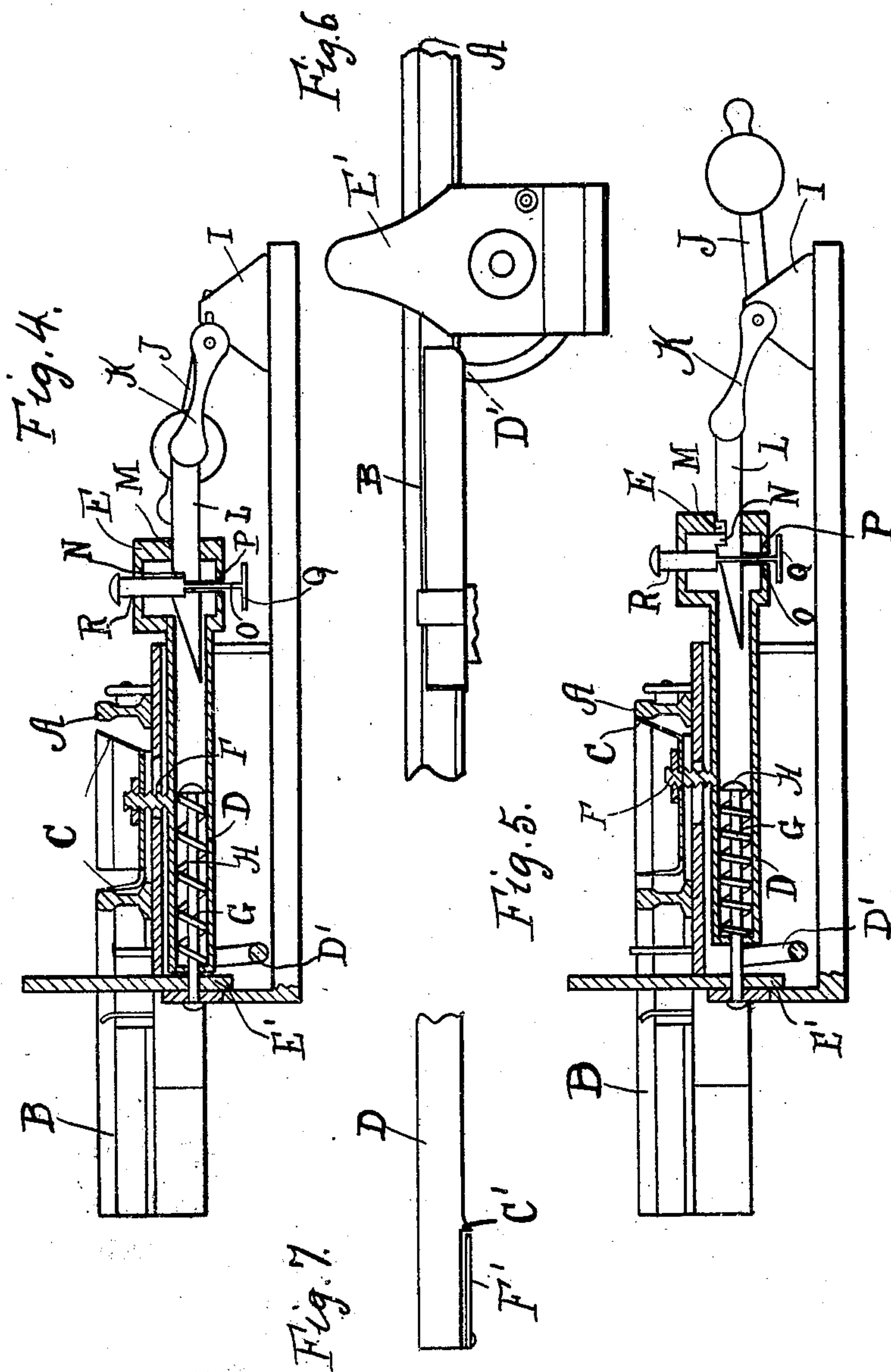
BY

*W. P. Williamson* ATTORNEY

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# UNITED STATES PATENT OFFICE.

FREDERICK SMITH, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR OF ONE-HALF TO HARRY HOBDELL, OF PHILADELPHIA, PENNSYLVANIA.

## SAFETY-SWITCH.

No. 925,395.

Specification of Letters Patent.

Patented June 15, 1909.

Application filed September 19, 1908. Serial No. 453,726.

*To all whom it may concern:*

Be it known that I, FREDERICK SMITH, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a certain new and useful Improvement in Safety-Switches, of which the following is a specification.

My invention relates to a new and useful improvement in safety switches, and has for its object to provide an exceedingly simple and effective device of this character whereby should the switch have been left open a train which is about to pass over the same will close it thus preventing accidents.

Another object of my invention is to provide a switch of the character described in which should a train be passing over the switch at the time another train is passing along the track and the latter train releases the switch point, said switch point will not close until the train using the switch will have passed beyond the same.

A still further object of my invention is to provide a device of the character described in which the switch may be opened by a lever at the side of the track, and one which may be readily closed by the train approaching the switch on the main track should said switch have been left open by carelessness or otherwise.

With these ends in view, this invention consists in the details of construction and combination of elements hereinafter set forth and then specifically designated by the claims.

In order that those skilled in the art to which this invention appertains may understand how to make and use the same, I will describe its construction in detail, referring by letter to the accompanying drawing forming a part of this specification, in which—

Figure 1 is a plan view of a switch made in accordance with my improvement, the switch point being shown as closed. Fig. 2, a side elevation thereof. Fig. 3, a section at the line  $x-x$  of Fig. 1 looking in the direction of the arrows. Fig. 4, a section at the line of  $y-y$  of Fig. 1 looking in the direction of the arrows, the operating lever and other parts being left in full, the switch being shown closed. Fig. 5, a similar view, the switch being shown open. Fig. 6, a view in elevation of that side of the track opposite to Fig. 2,

and Fig. 7, a plan view of a portion of the tube showing the flat spring fastened to the outside thereof.

In carrying out my invention as here embodied, A represents the main track, B the siding, and C the switch point. Secured to the switch point beneath the same is a tube D, on the outer end of which is secured the casing E. The tube D is attached to the switch point by means of a screw, bolt or rivet F, so that as said tube is moved from one side to the other the switch point will be moved in the same manner, thus opening or closing the switch. Inside the tube D is placed a spiral spring G, one end of which is fastened to the tube, the opposite end being attached to the pin H, said pin being fastened to some immovable portion of the switch. Beside the track is placed a bracket I, in which is movably secured the switch operating lever J. To this operating lever is attached the link K, its opposite end being fastened to the rod L, said rod adapted to enter the casing E through a suitable opening M, the inner end of the rod L has a notch N with which the catch O is adapted to engage when said notch comes in line therewith. The catch O extends through a slot P in the casing which assists in guiding it, and with the lower end of the catch is formed a horizontal bottom plate Q for the purpose to be hereinafter described. R denotes a plunger extending through the top of the casing E, so that it will act as a guide, and the top of this plunger is weighted so that it will constantly press with the catch downward. The operation of this portion of the switch mechanism is as follows:—The operating lever J is brought to the position shown in Fig. 4 which will bring the notch N in the rod L in line with the catch O, at which time said catch will drop into the notch when the parts are in the position shown in Fig. 4 the switch is closed. Now by throwing over the operating lever J it will cause the rod L to move outward through the medium of the link K, and as the catch is in the notch N the tube D will be drawn in the same direction against the action of the spiral spring G.

S represents brackets, in which is movably secured the lever T, having the extension U formed therewith, said extension being on a suitable angle so that when the casing is



drawn outward the bottom plate Q will rest above the extension U, or if found desirable may gradually ride up on the extension.

A suitable distance from the switch in one direction is placed the lever or plunger V and approximately at the same distance in the other direction is placed a similar lever or plunger W. To one end of the lever or plunger V is fastened the chain or cable Z, the opposite end of this chain or cable being attached to the lever T. To the other lever or plunger W is fastened the chain or cable A', which runs over a pulley B' on the same side of the switch as is the lever or plunger V. The opposite end of this chain or cable A' is fastened to the lever T the same as is the chain or cable Z. When either of the levers or plungers V or W is pressed downward it will draw the upper end of the lever T in the direction shown by the arrow in Fig. 1, which will raise the extension U on the lever T upward. This will cause the catch O to be disengaged from the notch N, thus freeing the casing and tube from the rod L, and by the action of the spring G said tube and casing will be drawn away from the switch operating lever which will close the switch, but will leave the switch operating lever J in the same position as when the switch is open, thus notifying a track walker or brakeman that somebody has been very careless in the operation of the switch.

Formed on the outside of the tube D is a lug C', with which is adapted to engage one end of the holding lever D', said holding lever being pivoted to some immovable portion E' of the switch. The opposite end of the lever D' extends alongside of the track for a distance equal to the distance of the space between the wheels of the longest cars, so that the flange of one wheel will always be upon said lever D' until the train has completely passed over the main track.

Fastened to the tube D is a flat spring F', the free end of which is in proximity to the lug C' when that part of the lever D' which runs beside the rails of the siding is pressed downward, the opposite end will be pressed inward against the action of the flat spring F' until it rests against one side of the lug C'. This will cause the tube D to be held in that position which opens the switch until the pressure has been released from the lever D' at which time the spring F' will press one end of the lever D' outward or away from the tube D allowing said tube D to return to its closed position through the action of the spiral spring G.

From the foregoing description it will be seen that should the switch be left open, by carelessness, or otherwise, and a train be coming toward it, the flanges of the wheels of the train approaching it will operate one of the levers V or W which will release the switch and allow it to close. But should a

train be entering the siding when the train approaching on the main tracks operates one of the levers V or W it will release the switch, but said switch will not close unless the train entering the siding has completely passed beyond the switch, because the flanges of its wheels will be resting on the lever D' and this will cause the inner end of said lever to engage with the lug C', which will prevent the switch closing, but just as soon as the train entering the siding has passed beyond the switch, the switch point having already been released, the spring F' will cause the lever D' to disengage from the lug C' and the spiral spring G will throw the tube D to its closed position, thus closing the switch.

Of course I do not wish to be limited to the exact details here shown as these may be varied within certain limits without departing from the spirit of my invention.

Having thus fully described my invention, what I claim as new and useful, is—

1. In a safety switch the combination with the main tracks and the switch point thereof, a tube movable from side to side, a casing having a slot and openings formed therein secured to one end of the tube, a catch, a horizontal bottom plate formed with said catch, a weighted plunger extending through the casing and fastened to the upper portion of the catch, means engaging with said catch for opening the switch point and means for closing said switch point, as and for the purpose set forth.

2. In a safety switch the combination with the main tracks and the switch point thereof, a tube movable from side to side, a casing having a slot and openings formed therein secured to one end of the tube, a weighted plunger extending through the casing and fastened to the upper portion of the catch, a bracket placed beside the track in proximity thereto, a switch operating lever movably secured to said bracket, a link, one end of which is secured to the switch operating lever, a rod having a notch formed in one end thereof adapted to extend into the casing, the opposite end of the link being secured to one end of said rod, the catch in the casing adapted to engage with the notch in the end of the rod, so that when the switch operating lever is thrown over in one direction it will open the switch and means for closing the switch, substantially as shown and described.

3. In a safety switch the combination with the main tracks and the switch point thereof, a tube movable from side to side, a casing having a slot and openings formed therein secured to one end of the tube, a weighted plunger extending through the casing and fastened to the upper portion of the catch, a bracket placed beside the track in proximity thereto, a switch operating lever movably secured to said bracket, a link, one end of which is secured to the



switch operating lever, a rod having a notch formed in one end thereof, adapted to extend into the casing, the opposite end of the link being secured to one end of said rod, the catch in the casing adapted to engage with the notch in the end of the rod, so that when the switch operating lever is thrown over in one direction it will open the switch, brackets, a lever having an extension formed on a suitable angle movably secured in said brackets, levers secured beside the track a suitable distance from the switch, a flexible connection secured to one of said levers and to the lever, a pulley attached to the track, a second flexible connection adapted to run over said pulley, one end of which is secured to the other lever, the opposite end to the same lever to which the first named flexible connection is secured and means for closing the switch when either of these levers has been pressed downward.

4. In a safety switch the combination with the main track and the switch point thereof, a tube movable from side to side, a casing having a slot and openings formed therein secured to one end of the tube, a weighted plunger extending through the casing and fastened to the upper portion of the catch, a bracket placed beside the track in proximity thereto, a switch operating lever movably secured to said bracket, a link, one end of which is secured to the switch operating lever, a rod having a notch formed in one end thereof adapted to extend into the casing, the opposite end of the link being secured to one end of said rod, the catch in the casing adapted to engage with the notch in the end of the rod, so that when the switch operating lever is thrown over in one direction it will open the switch, brackets, a lever having an extension formed on a suitable angle movably secured in said brackets, levers secured beside the track a suitable distance from the switch, a flexible connection secured to one of said levers and to the lever, a pulley attached to the track, a second flexible connection adapted to run over said pulley, one end of which is secured to the other lever, the opposite end to the same lever to which the first named flexible connection is secured, a spiral spring placed within the tube, one end of said spring being secured to the tube, the opposite end to some immovable portion of

the switch so that when the switch is released the action of said spring will close the switch.

5. In a safety switch the combination with the main tracks and the switch point thereof, a tube movable from side to side, a casing having a slot and openings formed therein secured to one end of the tube, a weighted plunger extending through the casing and fastened to the upper portion of the catch, a bracket placed beside the track in proximity thereto, a switch operating lever movably secured to said bracket, a link, one end of which is secured to the switch operating lever, a rod having a notch formed in one end thereof adapted to extend into the casing, the opposite end of the link being secured to one end of said rod, the catch in the casing adapted to engage with the notch in the end of the rod, so that when the switch operating lever is thrown over in one direction it will open the switch, brackets, a lever having an extension formed on a suitable angle movably secured in said brackets, levers secured beside the track a suitable distance from the switch, a flexible connection secured to one of said levers and to the lever, a pulley attached to the track, a second flexible connection adapted to run over said pulley, one end of which is secured to the other lever, the opposite end to the same lever to which the first named flexible connection is secured, means for closing the switch when either of these levers has been pressed downward, a lug formed on the outside of the tube, a flat spring secured to the tube the free end thereof being in proximity to the lug and a holding lever pivoted to some immovable portion of the switch, one end of which is adapted to engage with the lug formed on the tube, the opposite end extending along the rails of the track a distance equal to the space between the wheels of cars, said lever adapted to engage with the lug when a train is passing from the main tracks over the switch, as shown and described.

In testimony whereof, I have hereunto affixed my signature in the presence of two subscribing witnesses.

FREDERICK SMITH.

Witnesses:

HARRY HOBDELL,  
J. N. FORT, Jr.