

(No Model.)

3 Sheets—Sheet 1.

G. BESSER.
SAFETY SWITCH.

No. 543,077.

Patented July 23, 1895.

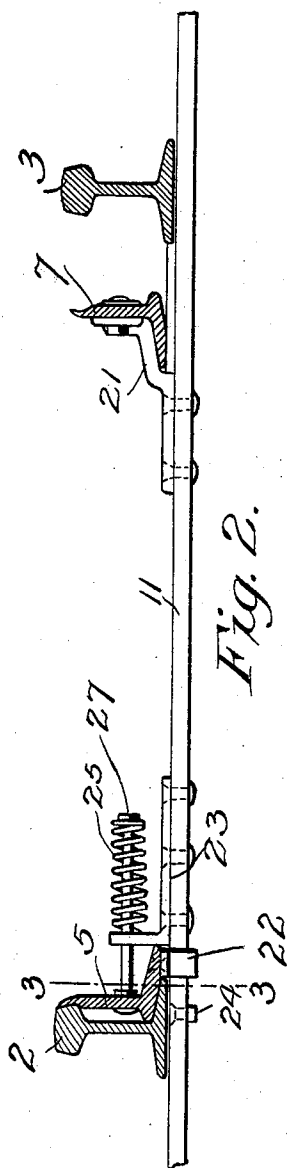


Fig. 2.

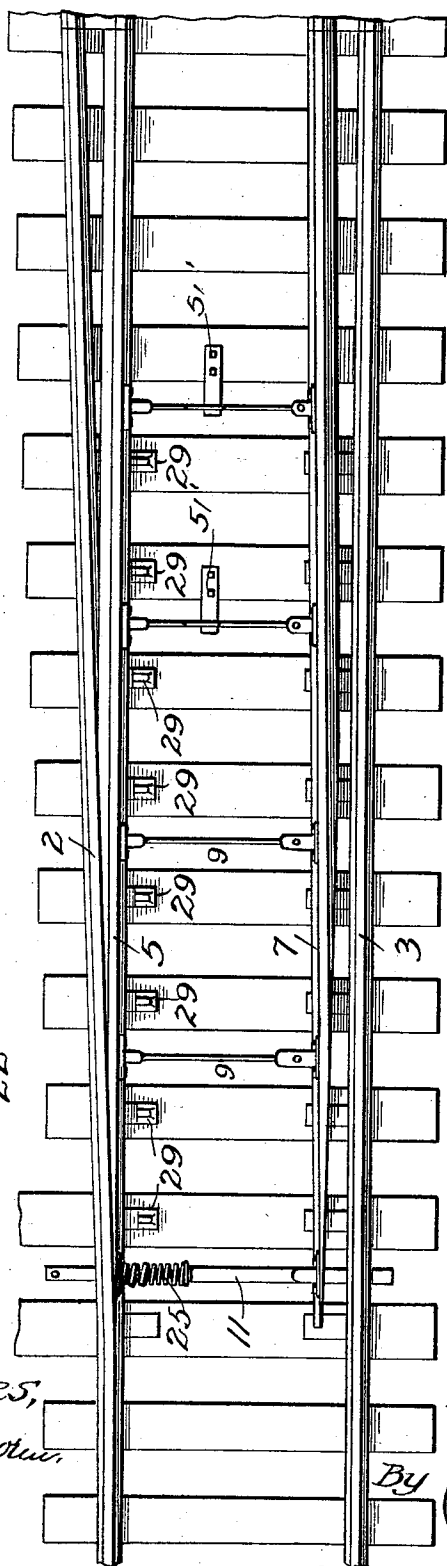


Fig. 1.

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George Besser.
By Paul H. Hawley
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(No Model.)

3 Sheets—Sheet 2

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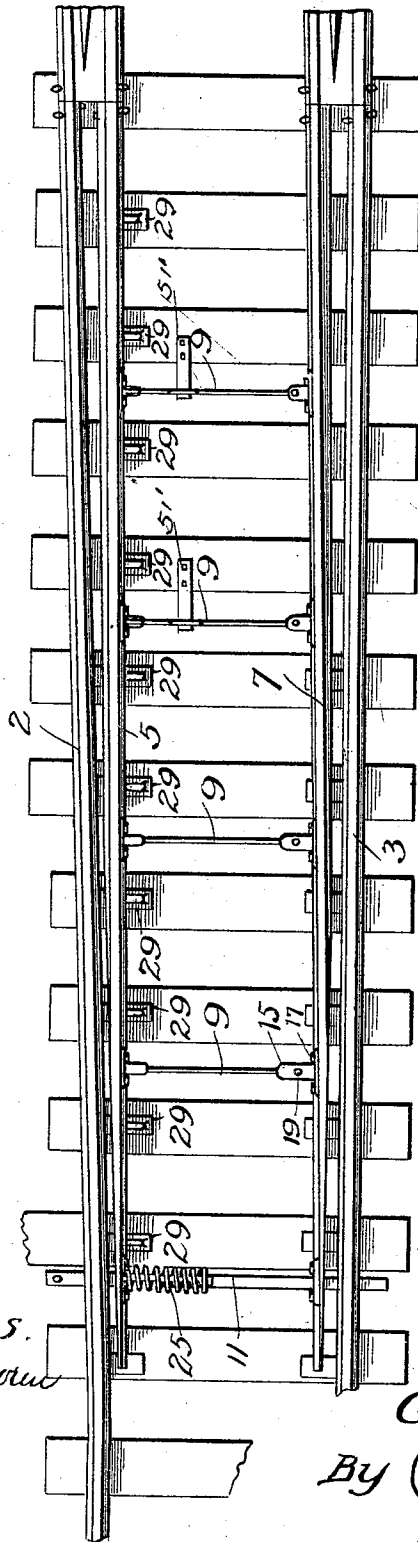


Fig. 3.

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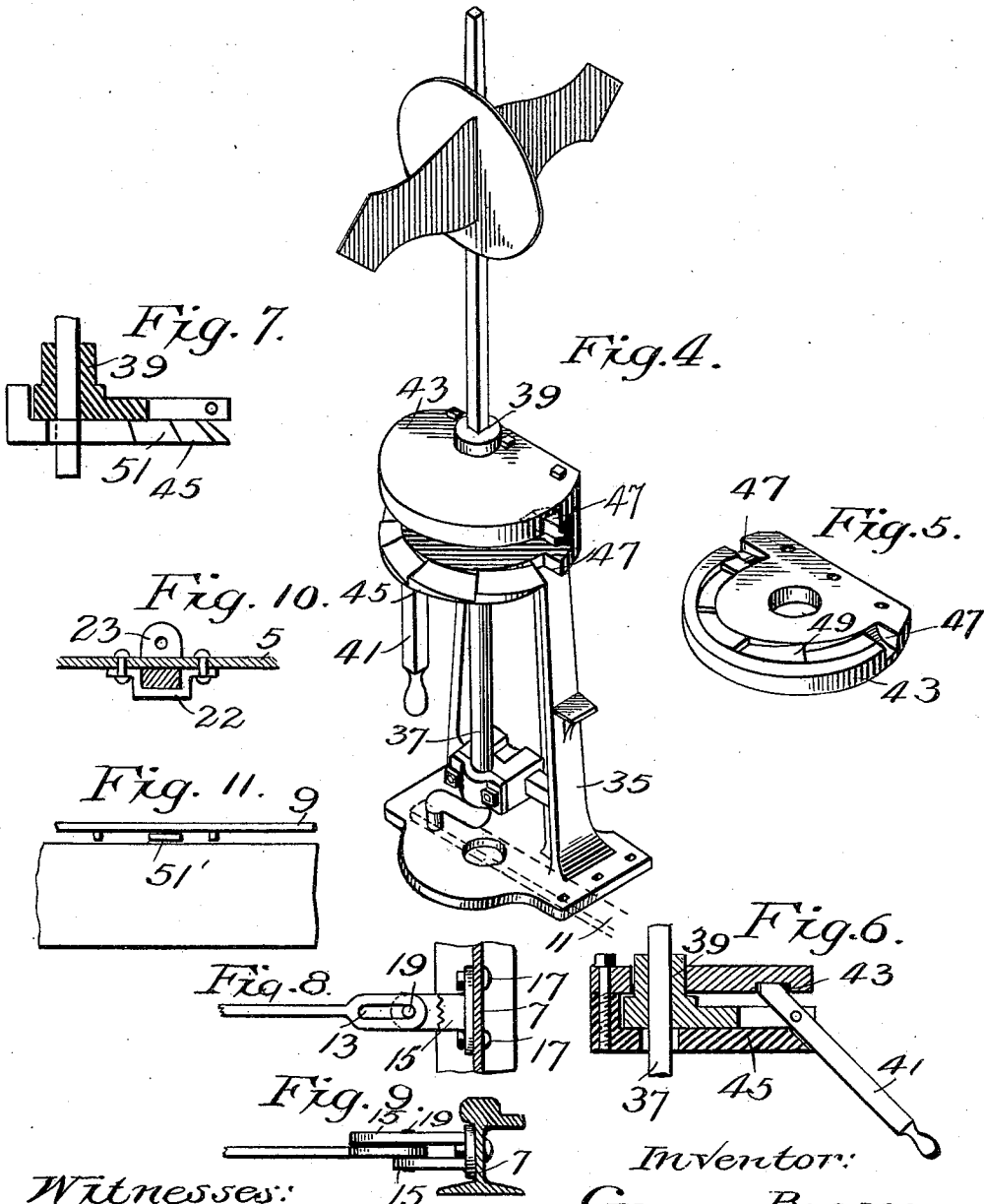
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3 Sheets—Sheet 3.

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SAFETY SWITCH.

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Witnesses:
Chas. E. Van Doren.
W. E. Looley

Inventor:
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By Paul Hawley
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UNITED STATES PATENT OFFICE.

GEORGE BESSER, OF MINNEAPOLIS, MINNESOTA.

SAFETY-SWITCH.

SPECIFICATION forming part of Letters Patent No. 543,077, dated July 23, 1895.

Application filed October 30, 1893. Serial No. 439,552. (No model.)

To all whom it may concern:

Be it known that I, GEORGE BESSER, of the city of Minneapolis, county of Hennepin, State of Minnesota, have invented a certain new and Improved Safety-Switch, of which the following is a specification.

This invention relates to improvements in the safety-switch shown and described in the patent to Louis Dunn, No. 524,273, dated August 7, 1894; and the objects that I have in view are to provide means whereby the points will be locked in position, even though the switch has been partially opened, so that in case the flanges of the wheels strike either the filling-piece on the outside of one of the points or the point itself the points cannot be crowded over so long as the switch-rod connects them with the switch-stand. In case, however, the switch-rod is broken and the points have become partially open, I provide means that will limit the movement of the points and at the same time will not prevent the setting of the switch when desired for the side track or main track.

To these ends the invention consists generally in the constructions and combinations hereinafter described and particularly pointed out in the claims, and will be more readily understood by reference to the accompanying drawings, in which—

Figure 1 is a plan view of a point-switch having my invention applied thereto, the points being provided with the filling-pieces upon their outer sides, as described and claimed in the Dunn application hereinbefore referred to. Fig. 2 is a detail view showing the head-rod and the means for connecting the points thereto and also showing the main or stock rails in section. Fig. 3 is a plan view showing the points partly open. Fig. 4 is a perspective view showing the switch-stand that is used in connection with these points. Figs. 5, 6, and 7 are details of the means for anchoring the points by a ratchet device on the switch-stand. Figs. 8 and 9 are details of the tie-rods. Fig. 10 is a detail view on the line 3-3 of Fig. 2. Fig. 11 is a detail side view of one of the tie-stops, as shown by 51' in Fig. 1.

In the drawings, 2 and 3 represent the stock-rails and 5 and 7 represent the movable points. These points are provided upon their outer surfaces with projections or filling-pieces in

exactly the same manner as are the points shown, described, and claimed in the Dunn application hereinbefore referred to, and they are adapted to receive the flanges of the wheels in the same manner as are the points in the said Dunn application. These points are connected by means of the tie-rods 9 and the head-rod 11, and while said tie-rods prevent said points from separating or moving from each other beyond a fixed distance they at the same time permit their free ends to move slightly toward or from each other, preferably on a standard-gage track for a distance of about two inches. This, as shown, is accomplished by having the ends of the tie-rods provided with slots 13 and projecting between lugs 15, secured upon the inner side of the point 7, preferably by means of suitable bolts 17, said lugs being provided with a pin 19, that passes through the slot in said tie-rod. Any other suitable arrangement of tie-rod to permit this movement might be employed.

The head-rod 11 is rigidly secured to the point 7, preferably by means of the bracket or brace 21, that is screwed to said rod and also to said point, preferably by being riveted or bolted to it. Said head-rod 11 is connected to the point 5 by a spring connection, which permits said head-rod and the other point to move a short distance after the movement of the point 5 has ceased. For this purpose I prefer to provide a suitable spring-box or bracket 23, that is rigidly secured upon the rod 11, and to which one end of a spring is secured. The opposite end of the spring is connected to a bolt 27, which passes through the spring, through the bracket 23, and is connected to the point 5. This spring holds the point 5 at all times against the bracket or spring-box 23 until the point 5 comes in contact with the rail-brace 29. I also prefer to provide upon the ties inside of the point 5 a series of brackets or rail-braces 29, against which the point 5 is brought and which limits its movement. I also provide on the bottom of the point 5 a strap 22, riveted or otherwise suitably secured thereto. The head-rod is provided with a lug 24, arranged so that it is normally about two inches from the said strap. Should the spring 25 give out or become broken, the lug 24 will engage the strap 22 and thereafter move the point 5 with the head-

rod 11. I provide an ordinary switch-stand 35, having the crank-rod 37, to which the head-rod 11 is connected; but in place of the usual throw-lever I provide an arm 39, to which is pivoted a gravity-handle 41. This handle when released tends to drop down to a vertical position, as shown in Fig. 4. A plate 43 is arranged above the arm 39 and a plate 45 below it. When the switch is turned into either of the positions in which it is to stand, the lever 41 drops into a notch or recess 47 in the plates 43 and 45, thereby locking said switch. The plate 43 is preferably provided upon its under surface with a series of ratchet-teeth 49, and the plate 45 may be provided upon its upper surface with a series of ratchet-teeth 51, as shown in Fig. 7.

Should the switch become partially turned by any means, the end of the lever 41 will engage the ratchet-teeth 49, or the under side of the lever will engage the ratchet-teeth 51, thereby locking the switch in any position in which it may happen to be; but at the same time these ratchet-teeth do not interfere with the throwing of the switch when the handle 41 is turned into a nearly horizontal position, when it will clear the ratchet-teeth, and they do not interfere with the switch moving to the main track.

In connection with this switch I employ the rerailing device shown in the patent to Louis Dunn, No. 524,273, dated August 7, 1894. By this mechanism the train is returned to the main track after passing a fouled switch.

The operation of the device is as follows: If for any reason the switch becomes partially open, so that a train running toward the points would foul the switch, the flanges of the wheels will strike on the outside of the point 5 and will tend to crowd said point over toward the opposite rail. If the switch-stand and the connecting-rod are intact, the ratchet device will be engaged by the lever 41, and the points will thus be held in the position in which they may be as against movement to open the siding, and if they continue in this position the flanges of the other wheels will come onto the filling-pieces on the outer sides of the points in the same manner, and by means of the device arranged between the stock-rails at the heel of the switch, as set forth in the patent above referred to, the entire train will thus be returned properly upon the main line. If, however, from any cause during the passage of the train over the points the latter should become reset to open the main line, the portion of the train following thereafter will pass the switch on the main line in the normal manner. If, while the switch is partially open, as before, the switch-stand or the connecting-rod are either of them broken, the point 5 will be crowded over by the wheel-flanges acting on its outer side, so as to bring it against the rail-braces 29, where it will be solidly held; but by reason of the points being held by the spring device when free to act about two inches nearer together than nor-

mal gage the rail 7 will in that juncture stand about two inches away from the rail 3, permitting the wheel-flanges upon the right side to pass freely between said rails and upon the outside flange of rail 7, and so the train will safely pass upon the main line, as before. I contemplate giving to the point 5 a possible movement of four inches and to the point 7 a possible movement of six inches. When the point 5 is moved against the rail-braces 29, the point 7 will have moved the same distance, and it will remain in this position unless force is exerted to move the point 7 over against the rail 3, and this can only be done by compressing the spring 25. When it is desired to set the switch for the side track, the two points will be moved together until the point 5 strikes the rail-braces 29, by which it will be stopped, and the movement of the point 7 will be continued against the tension of the spring 25 until this point is brought against the rail 3. Upon moving the point 7 the other way there will be no movement of the point 5 until the point 7 has moved a distance of two inches, and thereafter both of the points will move together. In some instances, for the purpose of bracing the point 5 on the side opposite the braces 29, I may provide one or more projections 51', secured upon the ties and arranged to be engaged by projections on the tie-rods 9 when the point is brought against the rail 2.

The advantages of this device are that the point 5 is always locked against movement to open the siding by the engagement of the ratchet device on the switch-stand so long as the connecting-rod is unbroken, so that in case the flange of the wheel strikes on the outside of the point 5 the points 5 and 7 cannot move over, or if the connecting-rod is broken the point 5 can move a distance of only about four inches, when it will be stopped by the side of the point coming against the braces 29.

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

1. In a safety-switch, the combination with the points, of a head rod having a rigid connection with one of said points and a spring connection with the other, substantially as described.

2. In a safety-switch, the combination with the points, of the switch-stand, the throw-rod, a connection between said throw-rod and the points, and a ratchet device on the switch-stand arranged to automatically anchor the points so as to prevent them from moving in the direction for setting to the side track but not interfering with the movement in the opposite direction, substantially as described.

3. The combination, with the points and the head-rod, of the switch-stand provided with the ratchet-teeth, the throw-rod to which said head-rod is connected, the arm on said throw-rod, and the gravity-handle pivoted on said arm and adapted to automatically engage said ratchet-teeth, substantially as described.

4. The combination, with the movable points, of the head-rod, a spring connection between said head-rod and one of said points, and a ratchet locking device arranged to automatically anchor said points to prevent movement in one direction, for the purpose set forth.

5. The combination, with the movable points 5 and 7 the head-rod, a spring connection between the head-rod and the points, and the series of rail braces 29 arranged to be engaged by the point 5 before the point 7 reaches the limit of its movement, for the purpose set forth.

6. The combination, with the main or stock rails, of the points 5 and 7, the extensible tie-rods, the head-rod rigidly secured to the point 7, the spring bracket on the head-rod, a spring arranged to hold the point 5 against said bracket, and the braces 29 arranged to be engaged by the point 5 before the point 7 is brought against the rail 3, substantially as described.

7. The combination, with the point 5, the head-rod 11, a spring connection between said head-rod and said point, the strap 22 on the point through which said head-rod passes, and a lug on the head-rod adapted to engage said

strap in case of breakage or failure of said spring connection, for the purpose specified.

8. The combination, with the points, of the extensible tie-rods connecting said points, and the projections 51' suitably supported and adapted to be engaged by projections on the tie-rods, for the purpose of anchoring one of said points against outward pressure, substantially as and for the purpose specified.

9. The combination, with the movable points and the head-rod, of the switch-stand provided with the plates 43 and 45 provided with the recesses 47 and with suitable ratchet teeth, the throw-rod 37, the arm 39 on said throw-rod extending between the plates 43 and 45, and the gravity-handle 41 on said arm adapted to engage the recesses 47 when the points are set for the side or the main track and to engage said ratchet-teeth when the points are in a neutral position, substantially as and for the purpose specified.

In testimony whereof I have hereunto set my hand this 20th day of October, 1893.

GEORGE BESSER.

In presence of—

C. G. HAWLEY,
M. E. GOOLEY.