June 6, 1950 S. R. GRANCHE 2,510,815

SAFETY DEVICE FOR RAILWAY SWITCHES

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Fig. 1.

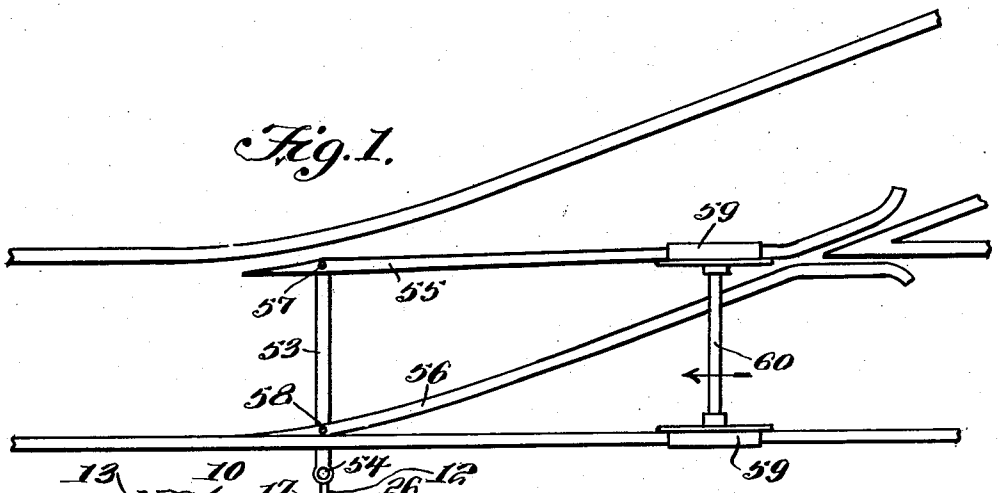


Fig. 2.

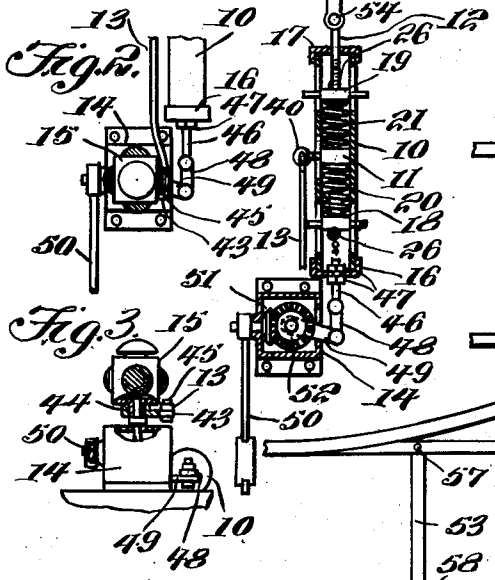


Fig. 3.

Fig. 4.

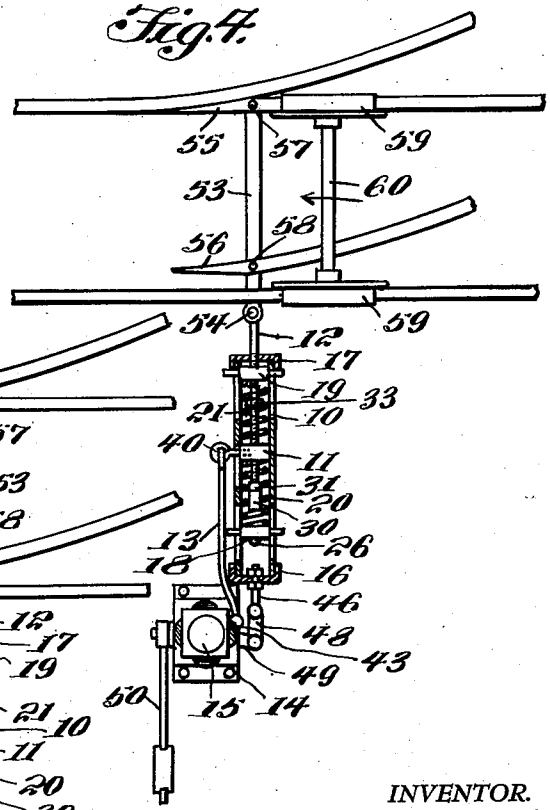
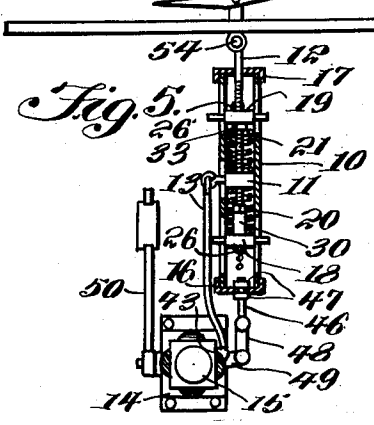


Fig. 5.



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Fig. 6.

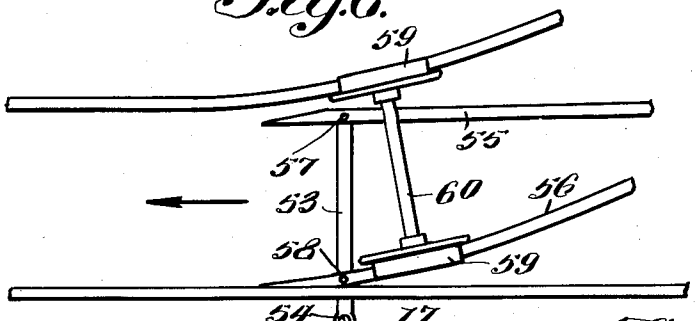


Fig. 10.

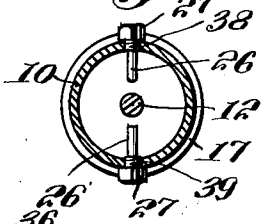


Fig. 14.

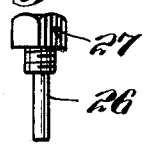


Fig. 11.

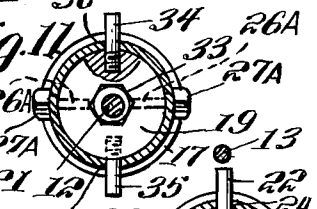


Fig. 12.

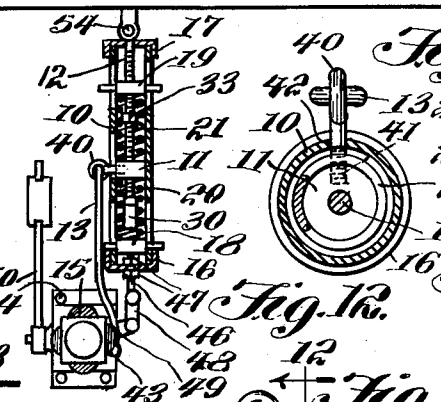


Fig. 13.

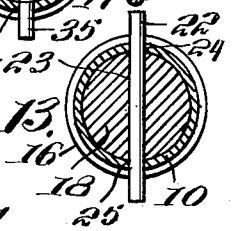


Fig. 7.

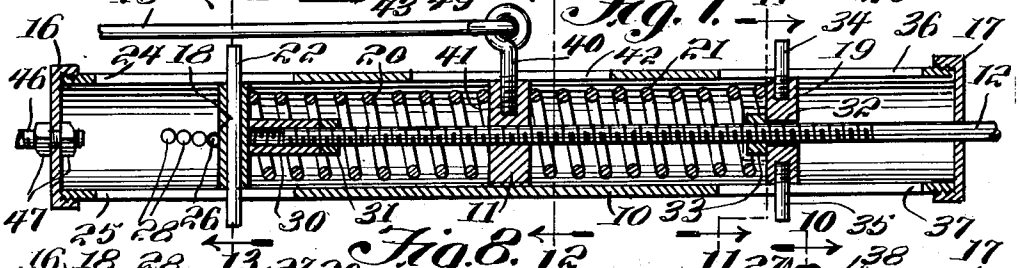
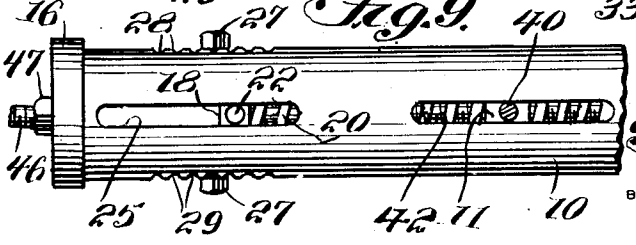


Fig. 8.



Fig. 9.



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UNITED STATES PATENT OFFICE

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SAFETY DEVICE FOR RAILWAY SWITCHES

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Application August 6, 1948, Serial No. 42,966

6 Claims. (Cl. 246—393)

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This invention relates to control devices for railway switches and particularly switches in yards where switching is performed, and in particular a control device for resiliently holding the switch points in the position to which they are forced when the switch is run through by an engine or cars which may have accidentally run through the switch and forced the points.

The purpose of this invention is to provide means for automatically holding switch points in the position to which they have been forced by an engine or cars running through the switch.

In the usual type of switch the switch points are free to move away from the rails after the emergency lug at the switch has been sheared by an engine or cars running through the switch, and as a result, numerous trains have been wrecked. With this thought in mind this invention contemplates a switch control having shear pins in the ends of a spring mounting cylinder with a piston in the cylinder connected to the switch points and with both the cylinder and piston connected to the switch stand.

The object of this invention is, therefore, to provide means for constructing a control device for railway switches wherein as soon as safety pins are sheared by an engine or cars accidentally forcing a switch the switch points will be held against the rails and the switch signal will be set indicating the position to which the switch points have been forced.

Another object of the invention is to provide a switch control which automatically sets a signal as a switch in a yard is run through in which the signal is also adapted to be set manually.

Another object of the invention is to provide a switch control device having shear pins in both ends wherein the device is adapted to function in either direction thereby holding switch points against a straight or curved rail.

A further object of the invention is to provide a switch control device for automatically holding the switch points and operating a signal as a switch is run which is of a simple and economical construction.

With these and other objects and advantages in view the invention consists of the new and useful combination, construction and arrangement of parts as hereinafter more fully described, set forth in the claims appended hereto and disclosed in the accompanying drawings forming part hereof, wherein:

Figure 1 is a view illustrating the control device on a switch with the cylinder and gear housing of the device shown in section.

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Figure 2 is a detail showing a plan view of the end of the control cylinder and gear housing with parts broken away.

Figure 3 shows an end elevation of the switch stand and signal mounting with parts broken away.

Figure 4 is a view similar to that shown in Figure 1 illustrating the device after the switch has been run by an engine or cars, in which the switch point is held against the rail.

Figure 5 is a plan view showing the parts in the positions shown in Figure 1 with the positions of the points reversed.

Figure 6 is a similar view showing the switch after the points have been forced by an engine or cars running through the switch.

Figure 7 is a longitudinal section through the switch control cylinder with parts broken away, and with the parts shown on an enlarged scale.

Figure 8 is a similar view taken from a point at right angles to that of the section shown in Figure 7, with parts shown in elevation and parts in section.

Figure 9 is a side elevational view of the cylinder with part broken away.

Figure 10 is a cross section through the cylinder taken on line 10—10 of Figure 8.

Figure 11 is a similar section taken on line 11—11 of Figure 7.

Figure 12 is a similar section taken on line 12—12 of Figure 7.

Figure 13 is a similar section taken on line 13—13 of Figure 7.

Figure 14 is a detail showing one of the shear or releasing pins.

Referring now to the drawings wherein like reference characters denote corresponding parts the switch control device of this invention includes a cylinder 10 having a piston 11 therein with a connecting rod 12, a signal actuating link 13, a gear housing 14 and a signal 15.

The cylinder 10 is provided with caps 16 and 17 on the ends and heads 18 and 19 are slidably mounted therein and resiliently held away from the piston by springs 20 and 21. The head 18 is held in the position shown in Figure 7 by a transverse pin 22 which extends through the pin opening 23 with the ends extending through slots 24 and 25 in the cylinder, and the outer face of the head engages extending ends 26 of pins 27 that are threaded into openings 28 and 29 in the wall of the cylinder, as shown in Figure 10 which is a section through the opposite end of the cylinder. The position of the head 18 in relation to the piston 11 which is threaded on the rod 12 is ad-

justable as the face of the head engages the end of a threaded sleeve 30 on the rod 12, and the sleeve is held by a lock nut 31.

The head 19 in the opposite end of the cylinder is provided with a smooth bore 32 through which the rod 12 extends, and this is spaced from the piston 11 by a lock nut 33. The head 19 is provided with extending pins 34 and 35 that are threaded in the head and extend through slots 36 and 37 in the wall of the cylinder 10. This head is also held by extending ends 26—A of pins 27—A similar to the pins 26 and 27, that are held in threaded openings 38 and 39 in the wall of the cylinder.

The piston 11 is provided with an eye bolt 40 that is threaded in an opening 41 and the eye bolt extends through a slot 42 in the cylinder. The link 13 is connected to the eye and the opposite end is connected to an arm 43 on a sleeve 44 at the base of the signal 15 by a pin 45. The end of the cylinder is provided with a rod 46 having nuts 47 thereon, and this rod is connected by a link 48 to an arm 49 of the gear housing 14, wherein as the hand lever 50 is moved to turn the signal the arm 49, through the gears 51 and 52 moves the cylinder 10, and with the piston 11 held as shown in Figure 7 the link 13 will turn the signal.

The inner end of the connecting rod 12 is threaded as shown in Figure 7 and the outer end is pivotally connected to a bar 53 by a pin 54, and with the bar 53 connected to the switch points 55 and 56 by the bolts 57 and 58, respectively, and with the elements positioned as shown in Figure 7, the wheels 59 on the axle 60, traveling in the direction of the arrow will force the points 55 and 56 over, breaking or shearing the points 26—A of the pins 27—A. In this action the cylinder 10 is held stationary by the rod 46 and arm 49 and the link 13 is moved outwardly by the piston 11 and rod 12 so that the signal 15 is turned.

When the device is used with a switch set as illustrated in Figure 5, the wheels 59 on an axle 60, traveling in the direction of the arrow shown in Figure 6, move the points to the position shown in Figure 6, breaking or shearing the ends 26—A of the pins 27—A in the far end of the cylinder so that the head 18 is released and the spring 20 snaps the head 18 toward the far end of the cylinder and the signal is turned by the piston 11 which is actuated by the spring 21. As the pins 27 are broken the head 18 is forced toward the end of the cylinder, by the spring 20, and as illustrated in Figure 6, the switch point will be positively held against the rail. In Figure 4 the spring 20 acting against the piston 11 holds the rails in the position shown, and in Figure 6 the spring 21, also acting against the piston 11, holds the points.

The cylinder 10 is inserted in the connection between the switch and arm 49 of the gear housing of the signal and with the parts positioned as shown in Figure 7, the switch may be operated in the usual manner with the signal being turned by the link 13 from the piston 11.

By this means the switch may be actuated in the usual manner and should the switch be accidentally forced by an engine or car running through the switch one of the sets of pins will be broken to permit the point to move against the rail and with the pins broken the switch point will be held against the rail by one of the springs of the cylinder. The device may be reset by compressing the spring or springs through the ends of the pins in the heads that extend through the cylinder wall, and while the springs are compressed new pins may be screwed into the openings therefor in the cylinder wall.

It will be understood that modifications may be made in the design and arrangement of the parts without departing from the spirit of the invention.

What is claimed is:

1. A railway switch control comprising a cylinder, a piston in the cylinder, a connecting rod on which the piston is adjustably mounted having an end extended from one end of the cylinder, means for connecting the outer end of the connecting rod to the movable points of a switch, traveling heads in the cylinder positioned on opposite sides of the piston, shear pins in the cylinder limiting outward movement of the heads, springs positioned between the heads and piston urging the heads against the pins, means connecting the cylinder to the operating lever of the switch whereby the cylinder is moved as the switch is opened and closed, and means connecting the piston in the cylinder to a signal associated with the operating lever whereby the signal is actuated with the lever and also with accidental forcing of the switch.

2. In a control device for a railway switch having switch points actuated by a switch lever through a rod, a cylinder having one end connected to the switch lever, a piston in the cylinder, a connecting rod in the cylinder on which the piston is adjustably mounted, one end of the said connecting rod extended through the end of the cylinder opposite to the end connected to the switch lever, traveling heads in the cylinder positioned on opposite sides of the piston, shear pins in the cylinder positioned to engage the outer surfaces of the heads, compression springs in the cylinder between the heads and piston for urging the heads against the shear pins, a bar connecting the extended end of the connecting rod to the rail points of the switch, a signal, and means actuating the signal by the piston in the cylinder.

3. In a control device as described in claim 2, means adjusting the positions of the said heads in relation to the connecting rod of the piston.

4. A control device as described in claim 2, wherein the heads are retained by pins extended through slots in the wall of the cylinder.

5. In a control device for a railway switch having switch points, a signal and a switch operating lever, the combination which comprises a cylinder, means connecting one end of the cylinder to the switch lever, a piston in the cylinder, a connecting rod on which the piston is positioned, means connecting the said connecting rod to the switch point of the switch, means adjusting the position of the piston on the said connecting rod, traveling heads also positioned in the cylinder and spaced on opposite sides of the piston the said traveling head in the end of the cylinder adjacent the track being slidably positioned on the said connecting rod and the traveling head in the opposite end of the cylinder being positioned to abut the end of the connecting rod, compression springs positioned between the said piston and traveling heads, and breakable means adjustably mounted in opposite ends of the cylinder and positioned whereby the breaking means in one end of the cylinder are broken by one of said traveling heads when the switch points are accidentally forced, the spring in the end of the cylinder in which the breakable means is broken retaining the parts in position whereby

the switch point is temporarily held in the position to which it has been forced.

6. In a control device for a railway switch having switch points, a signal and a switch operating lever, the combination which comprises a cylinder, means connecting one end of the cylinder of the switch lever, a piston in the cylinder, a connecting rod on which the piston is positioned, means connecting the said connecting rod to the switch point of the switch, means adjusting the position of the piston on the said connecting rod, traveling heads also positioned in the cylinder and spaced on opposite sides of the piston the said traveling head in the end of the cylinder adjacent the track being slidably positioned on the said connecting rod and the traveling head in the opposite end of the cylinder being positioned to abut the end of the connecting rod, compression springs positioned between the said piston and traveling heads, breakable means adjustably mounted in opposite ends of the cylinder and positioned whereby the breaking means

in one end of the cylinder are broken by one of said traveling heads when the switch points are accidently forced the spring in the end of the cylinder in which the breakable means is broken retaining the parts in position whereby the switch point is temporarily held in the position to which it has been forced, and means connecting the said piston in the cylinder to the signal whereby the signal is actuated when the switch points are accidently forced.

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