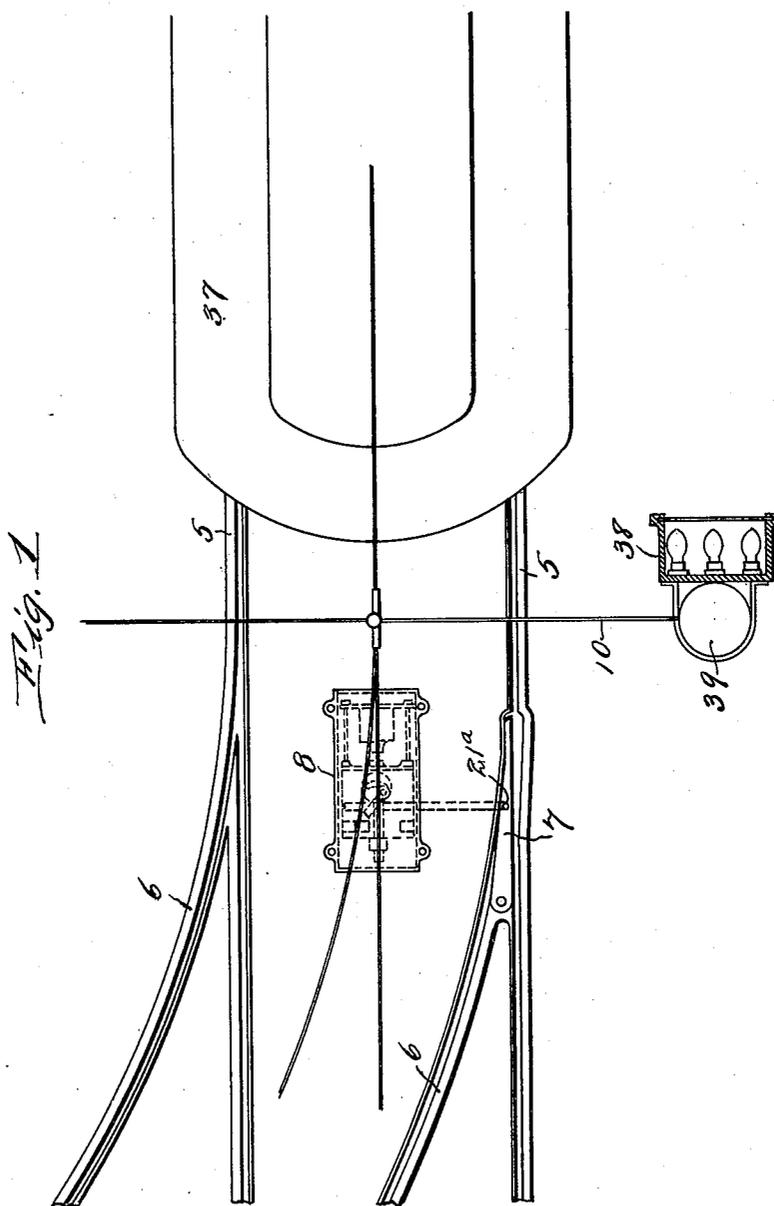


H. C. KINSEL.
SWITCH THROWING MECHANISM.
APPLICATION FILED JUNE 17, 1911.

1,071,641.

Patented Aug. 26, 1913.

3 SHEETS—SHEET 1.



WITNESSES

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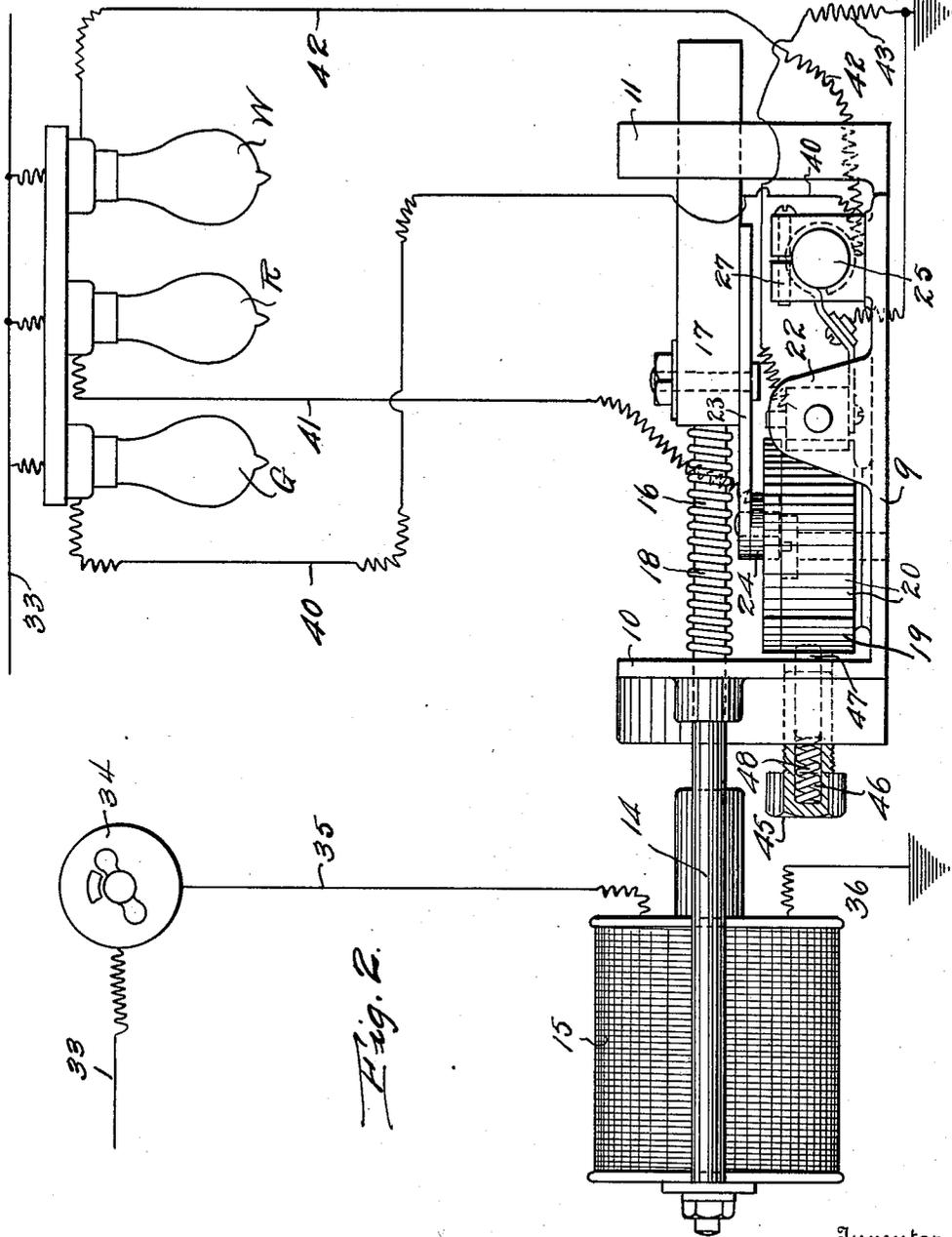


Fig. 2.

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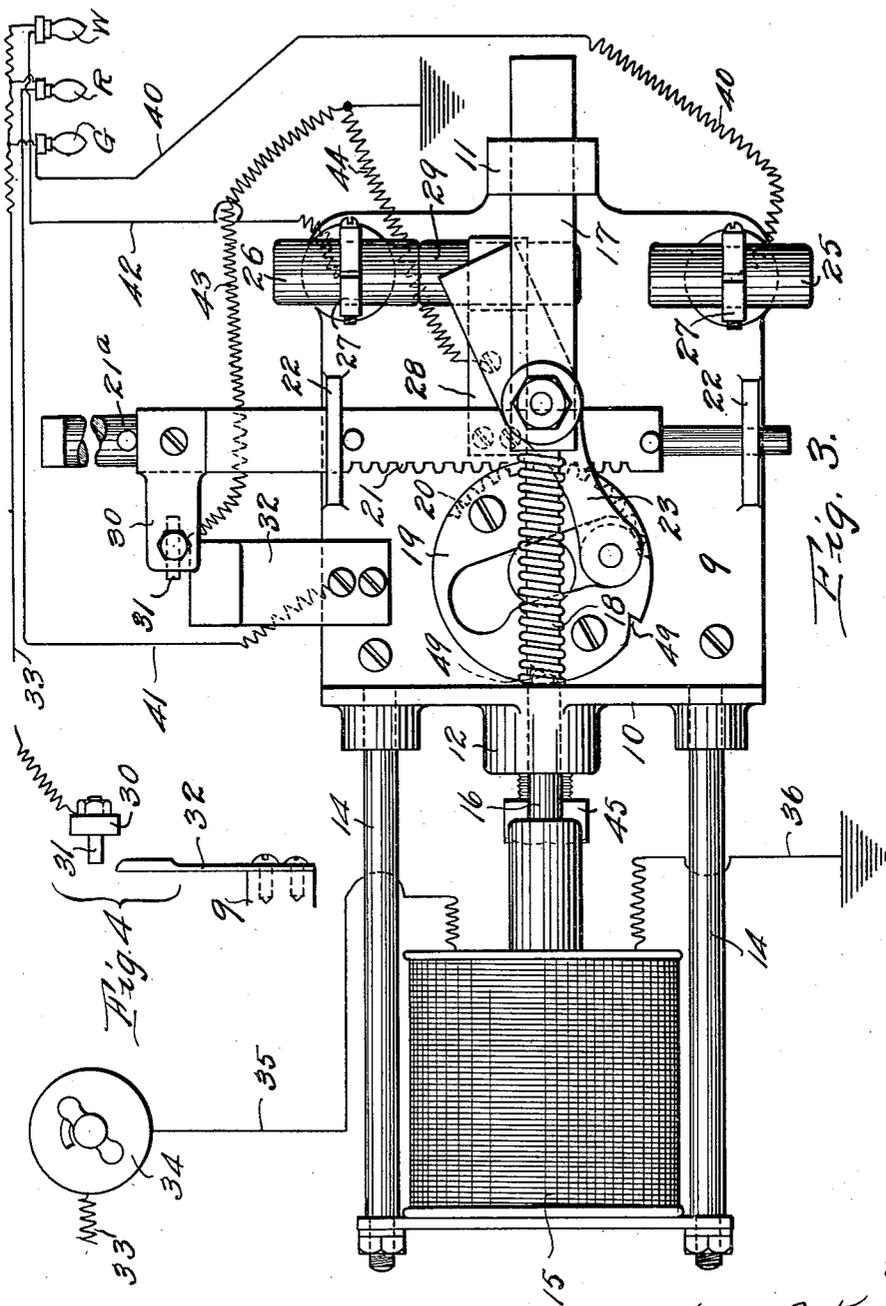
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UNITED STATES PATENT OFFICE.

HARRY C. KINSEL, OF ALTOONA, PENNSYLVANIA.

SWITCH-THROWING MECHANISM.

1,071,641.

Specification of Letters Patent.

Patented Aug. 26, 1913.

Application filed June 17, 1911. Serial No. 633,868.

To all whom it may concern:

Be it known that I, HARRY C. KINSEL, a citizen of the United States, residing at Altoona, in the county of Blair and State of Pennsylvania, have invented certain new and useful Improvements in Switch-Throwing Mechanism, of which the following is a specification.

This invention relates to switch operating mechanism, and the principal object of the same is to provide simple means whereby the motorman can readily set the switch point without leaving his car.

A preferred and practical embodiment of the invention is shown in the accompanying drawings wherein—

Figure 1 is a diagrammatic top plan view of a railway, including a switch and a car, showing the application of this invention. Fig. 2 is a view in side elevation of the switch point operating mechanism and the lamps and circuits therefor. Fig. 3 is a top plan view of the mechanism shown in Fig. 2. Fig. 4 is a detail view of a circuit closing device.

The improved switch operating mechanism may be used in connection with any type of railroad, but has been shown in use on a trolley road including the main track 5, the siding, or branch 6, and the switch point 7 at the junction of the main and branch tracks.

A casing 8 is centrally embedded in the main line opposite the switch point 7 and has the flat base support 9 for the point operating mechanism therein. The base 9 has the front and rear standards 10 and 11 projecting upwardly from the ends thereof, and the front standard 10 has a transverse bearing 12 formed thereon adjacent its upper edge. Supporting bars 14 project outwardly from the front standard 10 and sustain the magnet 15 in alinement with the bearing 12. The stem 16 of the magnet is slidable through bearing 12 and its rear is also slidable through the upper portion of rear standard 11. The major portion of stem 16 is cylindrical and its rear portion is preferably rectangular, as indicated at 17, and the inner end of the rectangular portion 16 forms an abutment against which one end of a spring 18 coiled about the cylindrical portion of stem 16 bears. The other end of the spring 18 bears against the inner surface of standard 10, and, as will be clear, the spring opposes a movement of

the stem toward the magnet and when the magnet is deenergized, forces the stem outwardly relative to the magnet.

A disk 19 is rotatably mounted on the base support 9 and is provided with peripheral teeth 20 meshing with the teeth of a rack 21 slidably mounted in opposite disposed upstanding bearings 22 at the sides of base 9. A link 23 has one end pivotally connected to the enlarged or rectangular portion of stem 16, the other end of said link having a stud 24 eccentrically pivoted to the disk 19. By this arrangement the longitudinal movements of stem 16 rotates disk 19 and the rotary movement of said disk slides the rack 21 transversely across the base 9. One end of the rack 21 is provided with an extension 21^a suitably attached to the switch point 7.

Oppositely disposed stationary contacts 25 and 26 are arranged at the rear corners of the base 9, said contacts preferably being carbon sticks carried by suitable holders 27. An arm 28 projects rearwardly from rack 21 and carries a circuit closer 29, preferably a stick of carbon adapted to engage either of the contacts 25 or 26 according to the position of the rack 21. The extension 21^a of rack 21 carries a laterally projecting arm 30 equipped with a pendent contact 31 adapted for wiping engagement with a spring contact 32 projecting laterally from base 9.

The current is supplied from the main line 33 with which is associated a switch 34 and said switch has a circuit connection 35 with the magnet 15, the magnet being grounded as indicated at 36. The switch 34 is located in the path of movement of suitable switch operating mechanism carried by the car 39 and under the control of the motorman by means of which the switch can be manipulated to energize or deenergize the magnet 15. When the magnet 15 is energized, the stem 16 is drawn toward the magnet causing link 23 to rotate disk 19 and the rotation of the latter slides rack 21 transversely across base 9 and thereby operates the switch point 7.

When the magnet 15 is deenergized the spring 18 projects the stem 16 away from the magnet, causing the link 23 to slide in the slot in the disk 19 to a position, such that upon the next energization of the magnet 15 the switch point 7 is thrown in the opposite direction.

In connection with the foregoing the invention contemplates employing visible signals for indicating to the motorman the condition of the switch, said signals being here shown as three lamps G, R, and W, in series with the main line 33 and mounted in a suitable casing 38 carried by a post 39 or other support. Lamp G has a circuit connection 40 with contact 25; lamp R has a circuit connection 41 with spring contact 32, and lamp W has a circuit connection 42 with contact 26. Contact 31 of the rack 21 has a ground connection 43, and the circuit closer 29 is in circuit with said connection 43, as indicated at 44. With this arrangement of circuits in mind, it will be clear that with the parts in the positions shown in Fig. 3, the lamp W is illuminated, and when the parts are moved to the opposite position by the spring 18, the circuit is closed through contact 25, causing lamp G to be illuminated. Should the closer 29 stop at a point intermediate of contacts 25 and 26, through accident, or any other cause, contacts 31 and 32 will be in engagement and the lamp R will be illuminated.

The three lamps are preferably colored in accordance with the usual railroad signals, G designating green, R designating red, and W designating white. As shown when the green light is displayed it indicates that the switch point has been thrown or set, the red light is only displayed when the switch is open, and obviously indicates danger, and the white light is displayed when the track is clear. Normally the switch point 7 is in position to keep the car to the main track, and the signal circuit is closed through contact 25 causing the white light to be displayed. When a car approaches the switch point 7 and desires to take the branch 6, the

motorman operates the circuit switch 34 to close the circuit through the magnet 15. When the magnet is energized, the rack 21 throws the point 7, as has been explained, breaking the circuit through contact 25 to lamp W, and closing the circuit through contact 26 to lamp G. By this means, the motorman can see the change in lights and thereby ascertain that the point 7 has been properly set.

In addition to the foregoing prominent features of the invention, means are also provided for locking the disk 19 against movement when the magnet 15 is deenergized. This locking means comprises a threaded bolt 45 that is adjustable through the standard 10. The bolt 45 is provided with a longitudinal chamber 46 in which a locking pin 47 is slidable. A spring 48 in chamber 46 projects pin 47 in position to engage one of the peripheral notches 49 of the disk 19 and thereby normally locks the disk against rotation. The bolt 45 being adjustable, it will be clear that adjustments thereof will regulate the tension of spring 48.

What I claim as my invention is:—

A switch operating device comprising a base support, a solenoid magnet carried thereby, a toothed disk rotatable on said support, a link connection between the stem of the magnet and the disk, a rack slidable over said support and in mesh with the disk, switch point engaging means carried by the rack, and a circuit including a car-operated switch for energizing the magnet.

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

HARRY C. KINSEL.

Witnesses:

N. E. GEE,
L. C. HOOVER.