

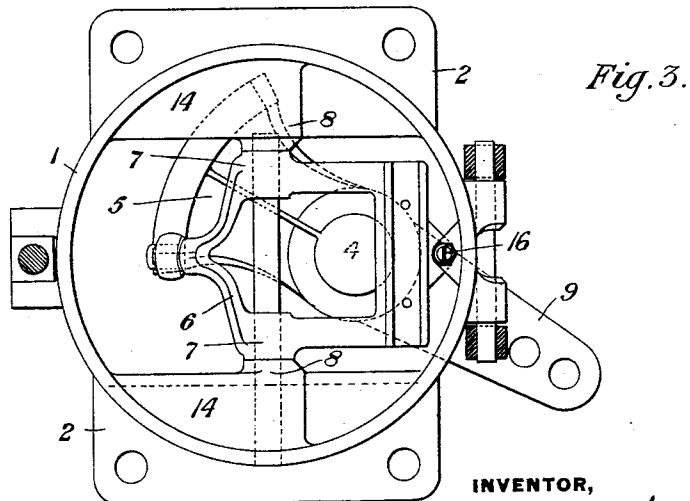
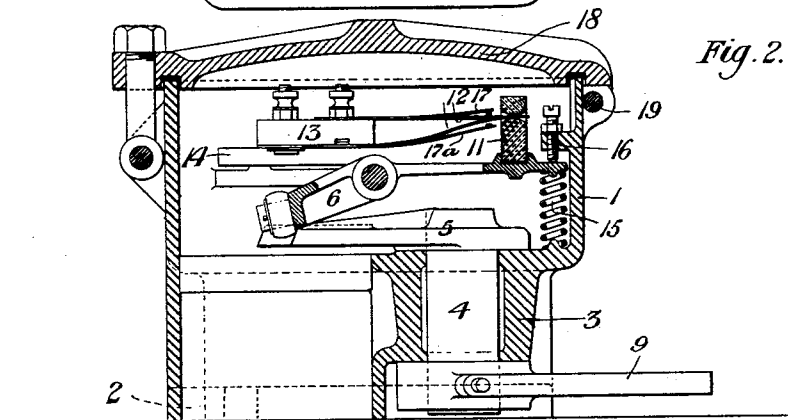
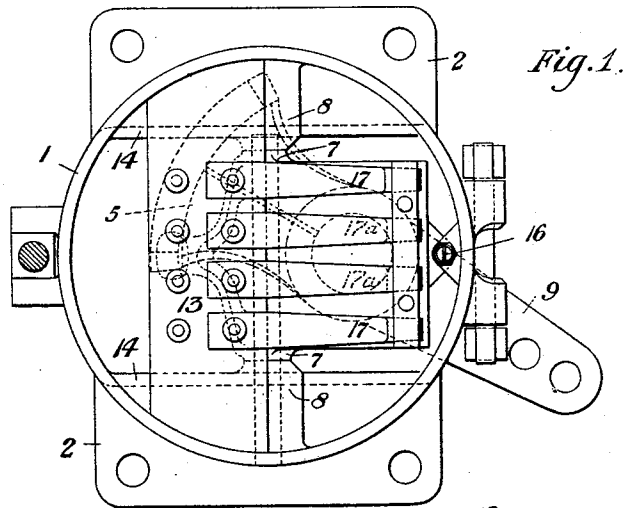
(No Model.)

2 Sheets—Sheet 1.

J. C. MOCK.
SWITCH BOX.

No. 587,746.

Patented Aug. 10, 1897.



WITNESSES:

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D. E. Gaither

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Att'y.

(No Model.)

2 Sheets—Sheet 2.

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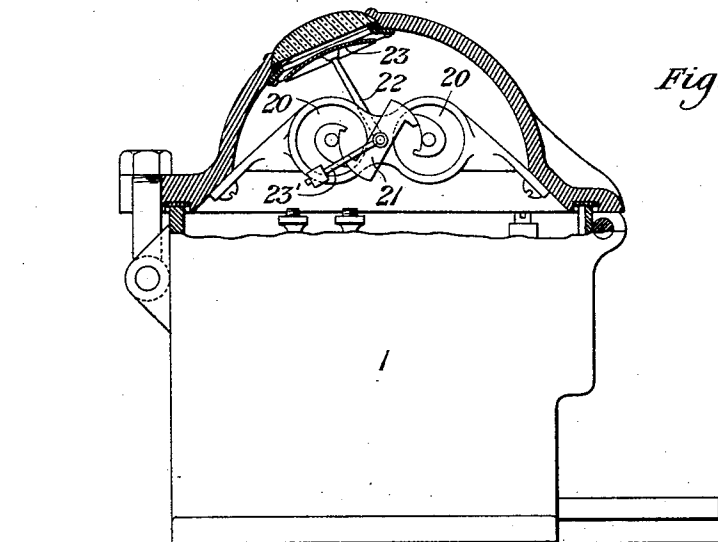


Fig. 4.

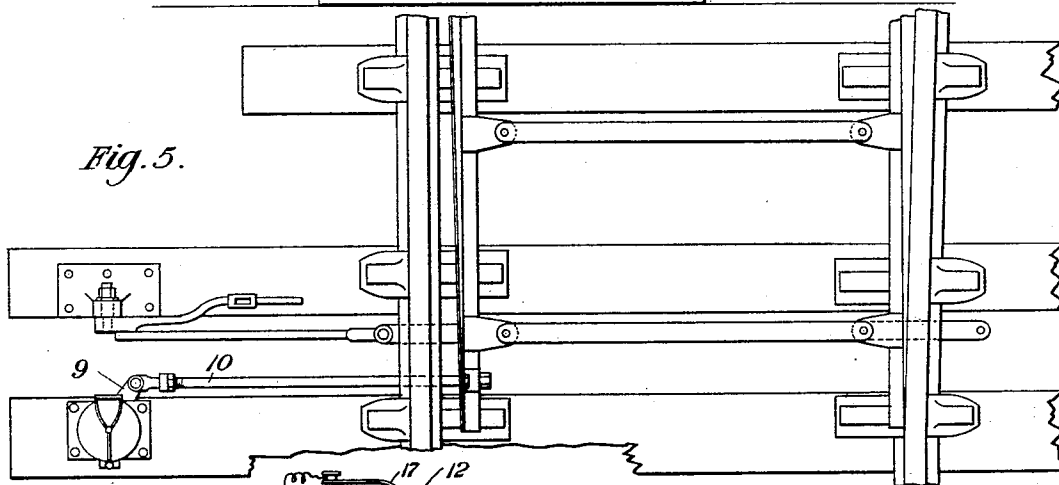


Fig. 5.

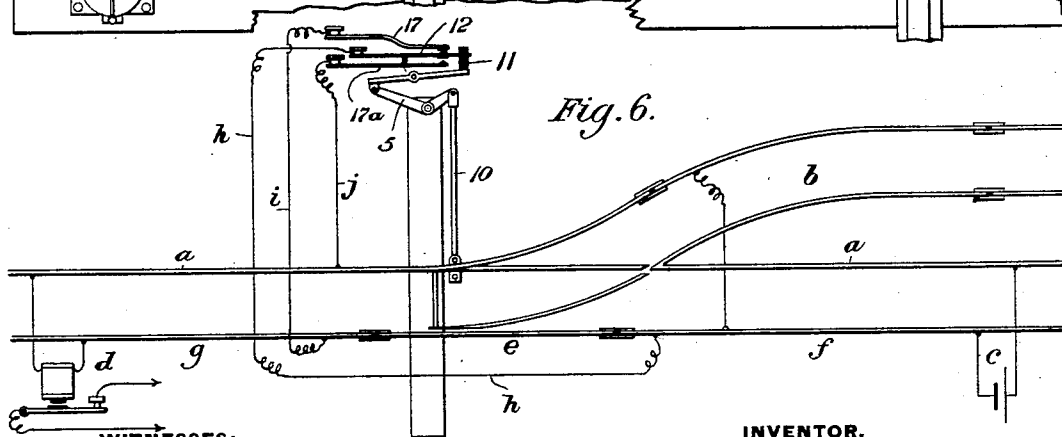


Fig. 6.

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UNITED STATES PATENT OFFICE.

JAMES C. MOCK, OF WILKINSBURG, PENNSYLVANIA, ASSIGNOR TO THE UNION SWITCH AND SIGNAL COMPANY, OF SWISSVALE, PENNSYLVANIA.

SWITCH-BOX.

SPECIFICATION forming part of Letters Patent No. 587,746, dated August 10, 1897.

Application filed June 10, 1896. Serial No. 594,954. (No model.)

To all whom it may concern:

Be it known that I, JAMES C. MOCK, a citizen of the United States, residing at Wilkinsburg, in the county of Allegheny and State of Pennsylvania, have invented or discovered certain new and useful Improvements in Switch-Boxes, of which improvements the following is a specification.

The invention described herein relates to certain improvements in that class or kind of mechanism known as "switch-boxes," which are employed for making and breaking the track-circuits in accordance with the position of the switch-rails in the section whose rails form part of the track-circuit, whereby the signal controlling the movement of trains along said section is caused to indicate the position of the switch-rails with regard to the main line.

In general terms the invention consists in the construction and combination substantially as hereinafter more fully described and claimed.

In the accompanying drawings, forming a part of this specification, Figure 1 is a plan view of my improved switch-box, the cover being removed. Fig. 2 is a sectional elevation of the same. Fig. 3 is a plan view, the cover and insulating-plate and springs being removed. Fig. 4 is a sectional elevation showing switch-box with indicator in the cover. Fig. 5 is a plan view of a switch, showing the manner of connecting the switch-box to the movable rails; and Fig. 6 is a diagrammatic view showing the manner of electrically connecting the rails at a switch to the make-and-break mechanism of the switch-box.

In the practice of my invention I provide a case or shell 1, preferably formed of metal and having laterally-projecting flanges 2 at its lower end, whereby the case or shell may be secured to the cross-ties of the track. Near one wall of the shell near its lower end is formed a bearing 3 for the reception of the vertical shaft 4. On the upper end of this vertical shaft is secured a sector-disk 5, having a portion at or near its perimeter cam-shaped, so as to engage and raise one end of the lever 6. This lever is provided with suitable trunnions 7, fitting in bearings 8, formed

integral with the case or shell. On the lower end of the shaft 4 is attached an arm 9, whose outer end is connected by a rod 10 to the movable rails of the switch in such manner that when said rails are shifted the shaft 4 will be rotated so as to oscillate the lever 6. On the free end of the lever 6 is secured a block 11, formed of insulating material, and through this block is inserted the free end of one or more springs 12, whose opposite ends are secured on opposite sides of a plate 13 of insulating material, said plate being attached upon ledges 14, formed integral with the case or shell. The free or outer end of this lever is normally held in a raised position by means of a spring 15, and the upward movement of the lever when shifted by the spring is limited by a set-screw 16, passing through a lug formed on the wall of the shell. On the plate 13 are also secured springs 17 on opposite sides of the springs 12, so that the latter can be brought alternately into contact with the springs 17 and 17^a when the lever is shifted.

The case or shell may be closed by a solid iron cover 18, hinged to one side of the shell and held in position by a pivotal bolt 19, but when it is desired to use an indicator in connection with the switch-box the cover is made dome-shaped, as shown in Fig. 4. Within this cover are secured the electromagnets 20. On the shaft of the rotary armature 21 of these magnets is secured an arm 22, carrying a disk 23, which by the rotation of the armature is shifted in front of and away from an opening covered with glass in the dome-shaped cover. The disk is shifted to position in front of the glass-covered opening by a weight on an arm 23', attached to the armature-shaft. As shown in the diagrammatic view, the electromagnets 20 are included in the signal-circuit controlling the movements of trains along the section in which the switch is located. As long as the circuit is closed the disk will be held by the armature out of line with the glass-covered opening in the cover, thereby indicating that the signal is in "clear" position and the section therefore unoccupied. When the circuit is broken, the disk will appear before the opening in the cover, thereby indicating that the section is

occupied by a train and the switch must not be shifted from "clear main line."

The manner of arranging the track-circuit where switches are placed in the main line is shown in Fig. 6. One of the main line of rails *a* and the rails *b* of the switch are electrically connected together and to one pole of the battery *c* and the relay *d*. A section *e* of the other main line is insulated from the other sections *f* and *g* of said line. The section *f* is connected at one end to a pole of battery *c*, and the opposite end of said section is connected by a wire *h* to the spring 12. The section *g* is connected at one end by a wire *i* to the spring 17 and at its opposite end to one pole of the relay *d*. The section *a* is connected by a wire *j* to the spring 12, which is shifted by the movement of the switch-rails into contact with the springs 17 and 17^a alternately. When the switch-rails are shifted to "clear main line," the circuit from battery *c* will be formed by rails *a*, relay *d*, section *f*, wire *i*, springs 12 and 17, wire *h*, and section *g* to battery. When the switch-rails are shifted for siding, the spring 12 will be moved out of contact with the spring 17 and into contact with spring 17^a, thereby cutting out relay *d*. As soon as the relay is deenergized the signal-circuit

controlled by said relay will be broken and the signal controlling the movement of trains in which the switch is located will go to "danger."

When used for crossovers, the track-circuits of the sections in which the derails are located will be connected to the several switch-boxes operated by the derail-switches in such manner as to require the derails in one track to be open and to be closed in the other track before the signal for the latter track can be cleared.

I claim herein as my invention—

In a switch-box, the combination of a movable cam adapted to be operated by the movable rails of a switch, a lever arranged to be shifted by said cam in one direction, a spring acting on the lever in opposition to the cam, and contact-springs adapted to form parts of a track-circuit to be moved into and out of contact with each other by the lever, substantially as set forth.

In testimony whereof I have hereunto set my hand.

JAMES C. MOCK.

Witnesses:

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M. S. MURPHY.