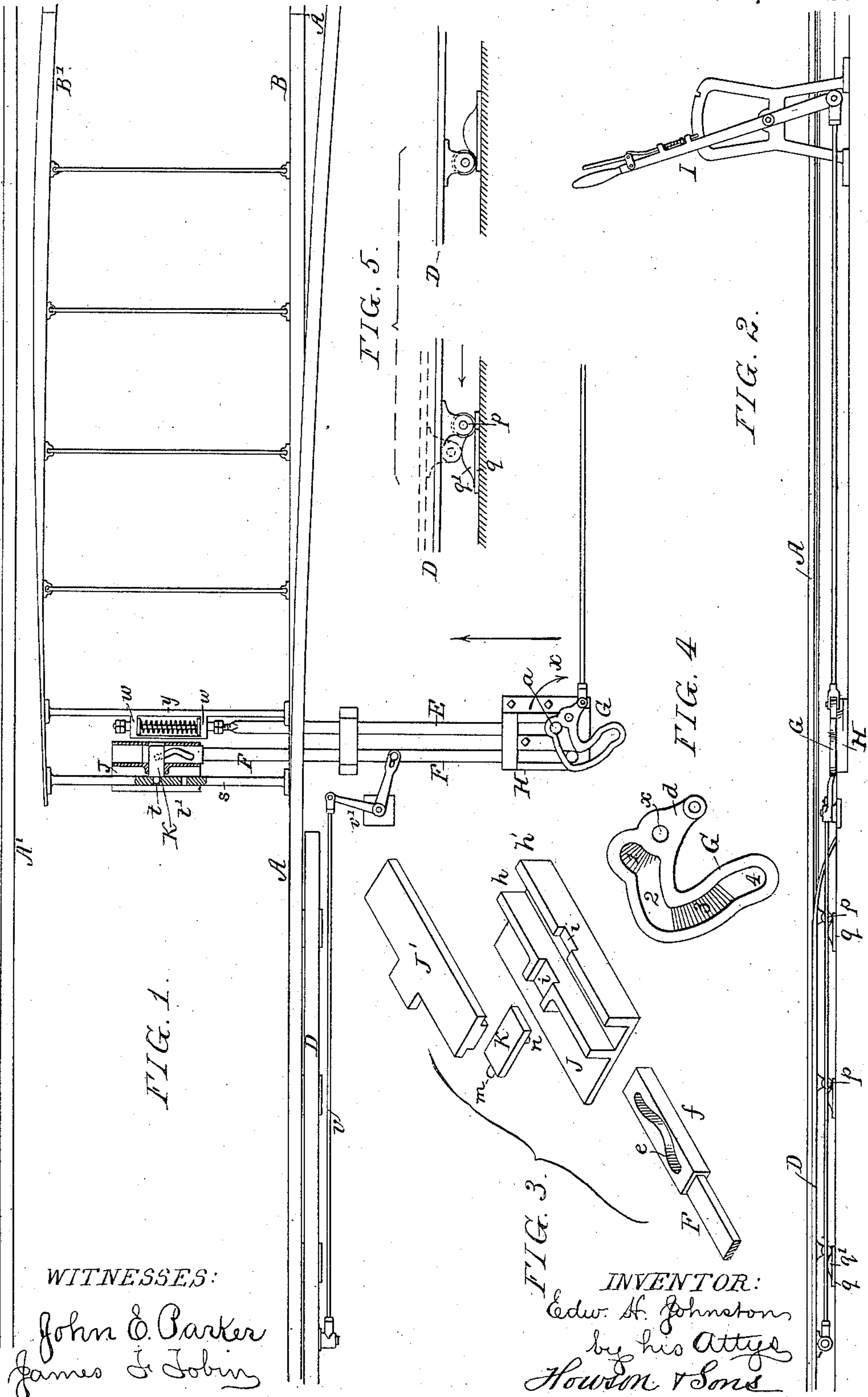


E. H. JOHNSTON.

MECHANISM FOR ADJUSTING AND LOCKING SWITCHES.

No. 311,433.

Patented Jan. 27, 1885.



WITNESSES:
John C. Parker
James J. Tobin

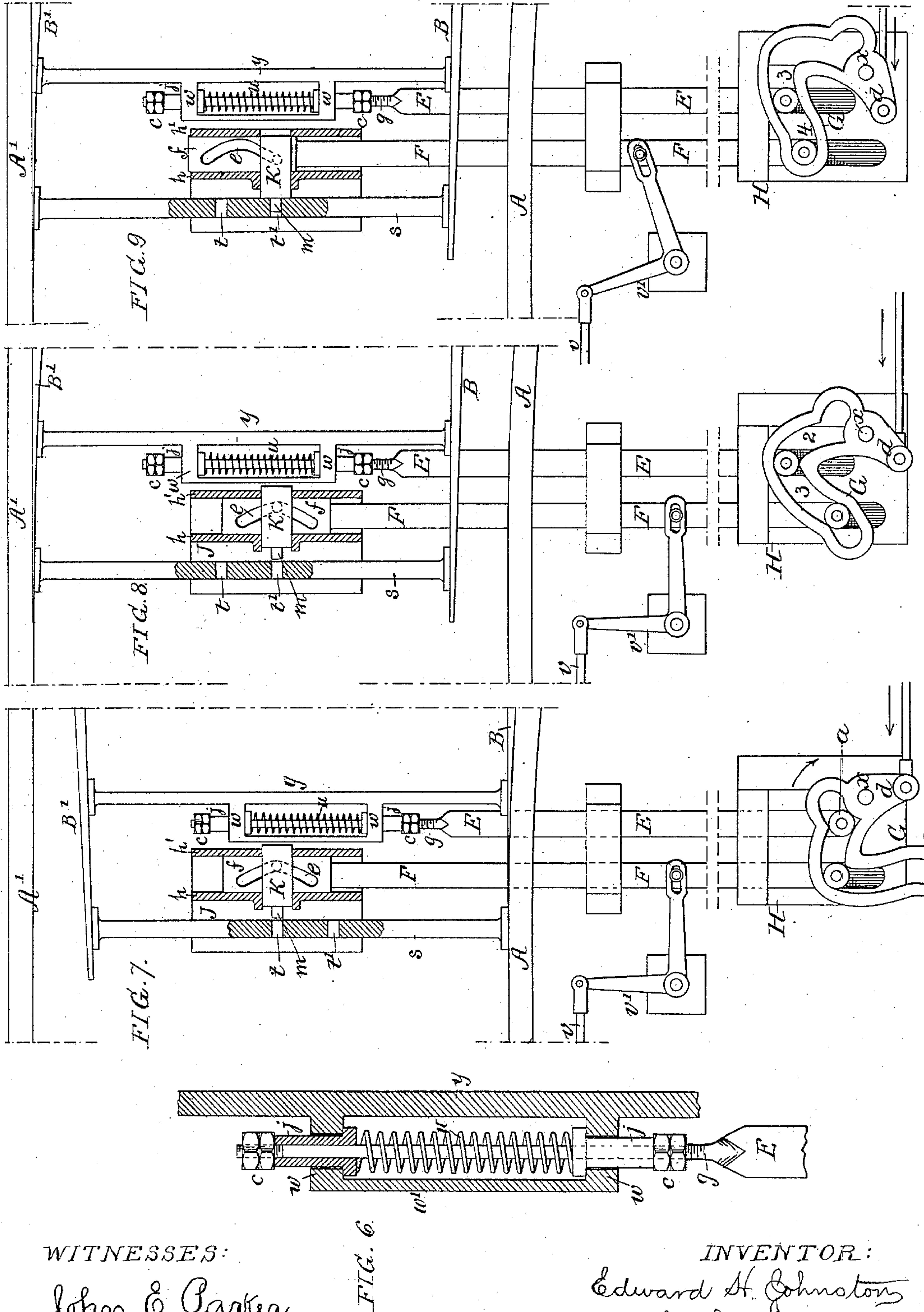
INVENTOR:
Edw. H. Johnston
by his Attys
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FIG. 6.

INVENTOR:

Edward H. Johnston
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UNITED STATES PATENT OFFICE.

EDWARD H. JOHNSTON, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO
THE WHARTON RAILROAD SWITCH COMPANY, OF SAME PLACE.

MECHANISM FOR ADJUSTING AND LOCKING SWITCHES.

SPECIFICATION forming part of Letters Patent No. 311,433, dated January 27, 1885.

Application filed November 26, 1883. (No model.)

To all whom it may concern:

Be it known that I, EDWARD H. JOHNSTON, a citizen of the United States, and a resident of Philadelphia, Pennsylvania, have invented certain Improvements in Mechanism for Adjusting and Locking Switches, of which the following is a specification.

The main object of my invention is to operate, lock, and unlock a switch by one lever or any available single operating device, so as to relieve the switchman from the double duty of operating the switch by one device and locking and unlocking it by another and independent device, and this object I attain by mechanism too fully explained hereinafter to need preliminary description.

A further object of my invention is to prevent the unlocking of the switch when a locomotive or car is in proximity thereto.

In the accompanying drawings, Figure 1 is a plan view of part of a track with switch and switch-operating mechanism; Fig. 2, a side view looking in the direction of the arrow, Fig. 1; Fig. 3, detached views, drawn to a larger scale than Figs. 1 and 2, of parts relating to the locking device; Fig. 4, a view illustrating the construction of the scroll-lever; Fig. 5, diagrams illustrating a feature of my invention; Fig. 6, Sheet 2, a section, drawn to a still larger scale, of a part of the switch-operating mechanism; and Figs. 7, 8, and 9, views of the switch operating and locking mechanism in different positions.

Referring to Figs. 1, 2, and 3, A and A' are fixed rails; B B', the rails of the switch. A guided bar, E, is connected to the switch, and a bar, F, appertains to mechanism for locking and unlocking the switch, both bars being controlled by a scroll-cam lever G. This lever G is pivoted at *x* to a frame or plate, H, which is secured to a suitable foundation, and which serves to guide the two bars E and F, the bar E being furnished with an anti-friction roller, *a*, which enters the scroll-slot of the lever G, and the bar F, having a similar roller for entering the same slot. The short arm *d* of the scroll-lever is connected to the usual switch-operating lever I, as shown in Fig. 2, or it may be connected to any other available operating mechanism. The end portion, *f*, of the bar F is preferably enlarged, as shown in

Fig. 3, and this enlarged portion is arranged to slide between guiding-ribs *h h'*, on a plate, J, which is secured to the track midway, or thereabout, between the switch-rails, as shown in Fig. 1, transverse guiding-recesses *i i* being formed in the ribs of the plate for the reception of a locking-block, K, which has one projection, *m*, for entering one or other of the two holes *t t'* in the cross-bar *s* of the switch, and another projection or pin, *n*, for entering the curved slot *e* in the enlarged end *f* of the bar F. The ends of the bar and locking-block are confined to their guides in the plate by a suitable cover, J'. The bar E is connected to the cross-bar *y* of the switch in the manner best observed in Fig. 6. There are two projections, *w w*, on the cross-bar *y*, and these are preferably connected together, as shown. The end portion, *g*, of the bar E is round, and is threaded for the reception of nuts *c*, the round portion passing through tubes *j j*, which can slide in the projections *w w* of the cross-bar *y* to an extent permitted by a spring, *u*. This is a common yielding connection of a switch-operating bar with a switch, and need not be more minutely described. The shape of the scroll-slot in the lever G may be varied as the distance apart of the two bars E F and other circumstances may suggest; but I prefer the shape shown in Fig. 4, on reference to which it will be seen that the shaded portions 1 and 3 of the slot are concentric with the pivot-pin *x*, the other portions, 2 and 4, being eccentric in respect to the pin.

The operation of the above-described parts may be best explained by reference to Figs. 7, 8, and 9 in connection with Fig. 1. In the latter figure the switch is open to the main track and is locked there, the pin *m* of the locking-block being in the hole *t* of the cross-bar *s* of the switch. During the first movement of the lever G on its pivot *x* in the direction of the arrow there will be no movement of the bar E, for the portion of the scroll-slot in the lever occupied by the roller of this bar is concentric with the pivot-pin. There will be a movement of the bar F, however, as its roller is in a portion of the slot which is eccentric in respect to the pin, and this movement is transferred through the medium of the curved slot *e* in the bar F to the locking-

block, the pin of which is withdrawn from the hole *t*. Hence the first movement of the lever *G* is to unlock the switch without disturbing it.

5 The several parts will be in the relative positions shown in Fig. 7, just after the switch has been unlocked. During the further movement of the lever *G* from the position shown in Fig. 7 to that shown in Fig. 8, the bar *E* 10 will be under the control of the eccentric portion 2 of the scroll-slot, and the switch will be moved so as to be open to the siding; but during this movement the roller of the locking-rod *F* was in the concentric portion 3 of the slot, 15 and hence the locking-rod was not disturbed. While the lever *G* is being moved from the position shown in Fig. 8 to that shown in Fig. 9, the roller of the bar *E* is in the concentric 20 portion 3 of the scroll-slot, but the roller of the bar *F* is under the influence of the eccentric portion 4 of the slot, and is so operated that the pin of the locking-block will enter the hole *t'* of the cross-bar *s* of the switch, 25 thereby locking the same in the position to which it has been moved. A rail, *D*, is so near to the rail *A* that part of the tread of a wheel of a locomotive or car will extend over it, and the under side of this rail is furnished with small rollers *p*, which bear on plates *q*, 30 each plate having a rounded or inclined elevation, *q'*, as best observed in the diagrams Fig. 5. The rail *D* is connected by a rod, *v*, and bell-crank lever *v'* to the locking-bar *F*, and this bar is free to be operated as long as there 35 is no weight on the rail *D*, the latter riding freely over the elevations on the plates *q* when

the bar *F* is operated, but should the wheels of a locomotive or car bear on the rail *D* while the switch is locked, there can be no unlocking of the switch, the weight on the rail preventing it from riding over the elevations. 40

I claim as my invention—

1. The combination, with a switch, of the following instrumentalities: first, a lever, *G*, having in one arm a scroll slot or recess, the 45 other being connected to any available operating mechanism; second, two bars, *E* and *F*, both under the control of the scroll slot or recess of the lever, the bar *E* being connected to the switch; and, third, a switch-locking device 50 also controlled by the scroll-slot of the lever through the medium of the bar *F*, all substantially as set forth.

2. The combination of a switch operating rod, *E*, and switch-locking rod *F*, with a lever, 55 *G*, having a scroll-slot, the portions 1 and 3 of which are concentric with the pivot of the lever, the portions 2 and 4 being eccentric therewith, substantially as set forth.

3. The combination of a switch, the cross- 60 bar and its holes *t t'*, with a locking-block, *K*, and with a rod, *F*, having a curved slot for controlling the block, substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of 65 two subscribing witnesses.

E. H. JOHNSTON.

Witnesses:

JOHN E. PARKER,
HARRY SMITH.