

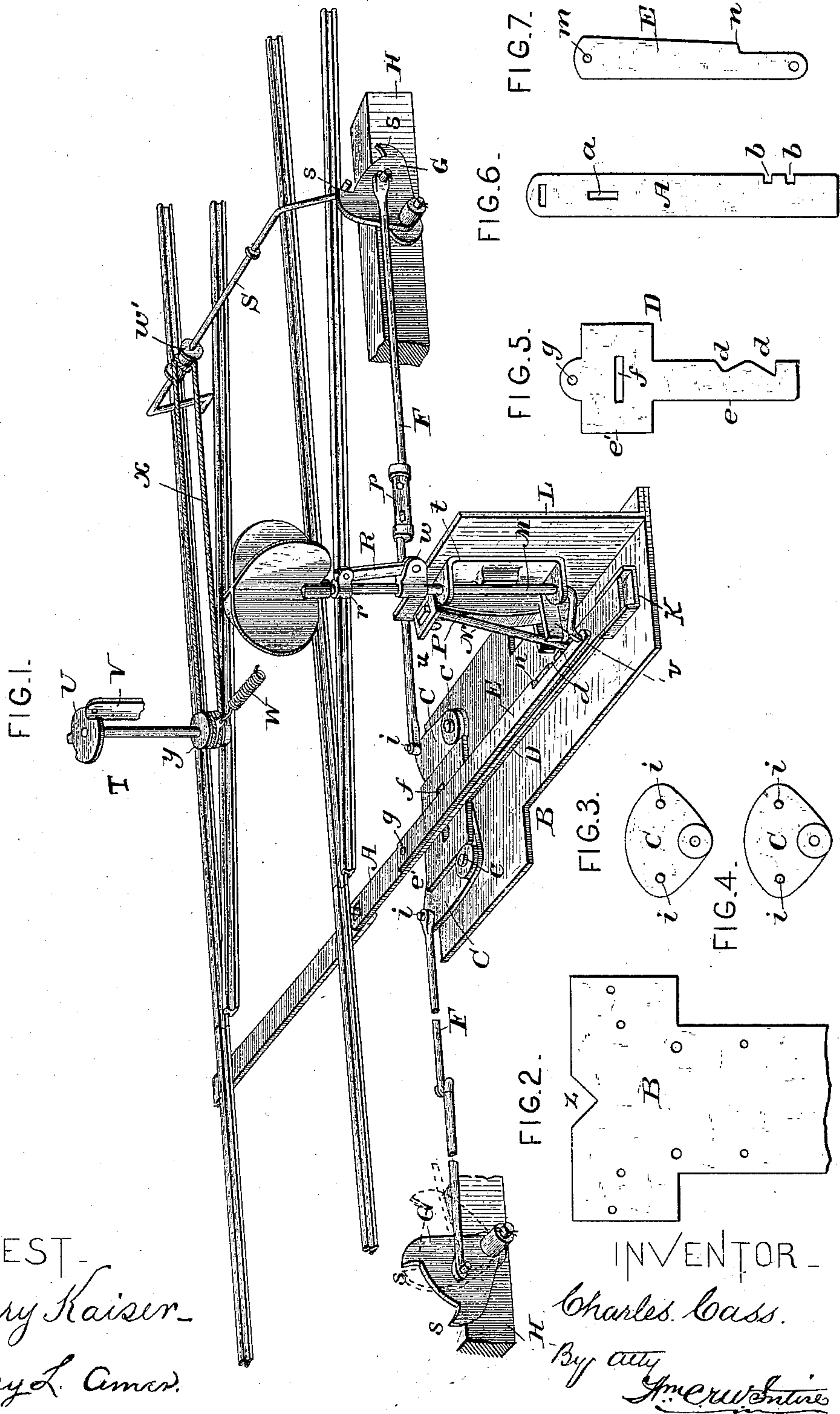
(No Model.)

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AUTOMATIC SWITCH MECHANISM FOR RAILROADS.

No. 343,699.

Patented June 15, 1886.



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AUTOMATIC SWITCH MECHANISM FOR RAILROADS.

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To all whom it may concern:

Be it known that I, CHARLES CASS, a citizen of the United States, residing at Ottumwa, in the county of Wapello and State of Iowa, have
5 invented new and useful Improvements in Automatic Switch Mechanisms for Railroads, of which the following is a specification.

This invention relates to certain new and useful improvements in railroad-switches
10 which are designed to be automatically operated by passing trains, the same consisting, substantially, in the parts as constructed, and in such details of arrangement and combinations thereof as will hereinafter be distinctly
15 described, and pointed out in the claims.

There have been numerous inventions for a similar purpose patented heretofore, many of which, however, do not operate with such assurance or degree of safety to the passing trains
20 as that the parts can be perfectly relied upon to at all times yield to the force by which it is intended they shall be actuated, such inaction of the operative mechanism frequently resulting in accident to the trains, and consequent
25 loss of life and property.

The object of the present invention is to provide an automatic switch-operating mechanism which, while being constituted of a comparatively small number of parts, is yet so disposed or arranged as to promptly yield to the
30 actuating force, either to open or close the switch, and at the same time securely lock or retain the latter in either of the positions to which it may be brought or adjusted, thereby
35 overcoming to a great extent the objections heretofore experienced with many similar inventions.

Another object of my invention is to provide a suitable means of attachment or connection of the signal to the movable parts of the
40 switch mechanism, whereby the same is also automatically operated, to indicate by appropriately-selected colors whether the switch is opened or closed, further objects appearing
45 more fully from the description hereinafter following.

Referring to the accompanying sheet of drawings, Figure 1 represents a view in perspective of an automatic switch-operating mechanism embodying my invention, the same also
50 illustrating in skeleton outline the frame-work of a car-truck in which is included the mechanism

preferably employed for actuating the switch devices; and Figs. 2 to 7, inclusive, are detail views of the several principal parts, by
55 which their construction is more clearly illustrated.

Reference being had to the several parts by the letters marked thereon, A represents a movable bar, which is connected at its forward
60 end to the switch to be shifted or adjusted, and is provided at near such end with a slot, *a*, while at near its opposite end, on the inner edge or side, the notches *b b* are formed. (See Fig. 6.)

B represents the bed plate, on which the several operative devices are located, and on the upper surface of which, at suitable distances from each side of the bar A, the links C C are
65 pivoted, as at *c*, the said links having each the studs *i i*, and being the medium through which the actuating force is communicated to the movable bar A and the other movable parts, as will be described hereinafter.

D designates a T-shaped plate, which is arranged intermediate of the bed-plate B and
75 movable bar A, the same being formed on its stem *e*, or portion of greatest length, with notches *d d*, the opposing sides or walls of which are correspondingly inclined, as is clearly
80 seen at Fig. 5, while that portion, *e'*, of shortest dimensions is formed with a slot, *f*, and provided with a pin or stud, *g*, the said pin being designed to enter the slot *a* in the bar A, to form a movable connection therewith,
85 and the slot *f* being for the reception of the opposite studs *i i* of the two links C C, as will appear from a study of Fig. 1.

E represents a bar, which is arranged above or on top of the bar A, and is formed at its
90 forward end with an eye or opening, *m*, designed to fit upon the stud *g* of the plate D. The opposite end of this bar is formed with a similar opening for the reception of the lower end of the signal rod or staff, and is reduced
95 in width for a short distance from such end to form a shoulder, *n*, which, in the movement of the several parts, is intended to register with the corresponding side of one of the notches *b* in bar A, so that when the bar is
100 locked automatically after its movement outwardly with respect to the switch the bar E will also be locked against further movement in a corresponding direction, thereby over-

coming the liability of the wrong side of the signal or target being brought around to the view of the engineers or other operatives.

F F represent connecting-rods, which extend from each side of the operating mechanism to a suitable distance, their adjacent or contiguous ends being connected to the corresponding outer studs, *i i*, of the links C C, they having their opposite ends attached, respectively, to the cams G G, suitably pivoted to the strips H H, arranged alongside the main track at the proper points, as shown. These connecting-rods are preferably formed in sections, as indicated by the connection *p*, by which they may be lengthened and the distance of the cams G from the main devices shortened or extended, this being sometimes desirable. The cams G are hollowed out or recessed on their upper edges, as shown, so as to form the ears or lugs *s s*, by which they may be more readily engaged by the devices by which the connecting-rods are actuated to operate the shifting and locking devices.

K designates a channeled plate, in which the free or unconnected ends of the plate D and bar A work and are guided to insure precision of movement thereof.

L represents a stanchion or upright, which is provided on its side with a support, *t*, for the signal pole or staff M, and also having a projection, *u*, in which the upper end of the locking-bolt N is held, and guides *v*, in which the lower end thereof moves or works. The said bolt N is pressed outwardly at its lower end by a spring, P, and as the bar A is caused to move back or forth it engages one or the other of the notches *b b* formed therein, thus locking the switch, whether it be opened or closed.

Fixed upon the staff M is a collar, *w*, to which is pivoted a lever, R, that is turned up to rest in a holder, *r*, provided for it. This lever is for the purpose of enabling the mechanism to be shifted by hand when required, for it is evident that by turning the same either to the right or left the switch will be operated in like manner as when actuated from one or the other of the cams G.

As a convenient means of insuring a proper contact of the cams G from the passing trains, I have devised the arrangement of mechanism shown in skeleton form, Fig. 1, which is intended to be arranged or mounted in the truck-frame of the foremost or leading car of the train. These devices consist of a shaft, S, extending across the truck-frame, and having a bend or crank at each end thereof, the same also being provided with a drum, *w'*, around which a cord or chain, *x*, passes, and thence to and around a similar drum or pulley, *y*, carried by the lower end of an upright rod, T. Secured to the said rod T is a ratchet or toothed wheel, U, which is intended at the proper time to be engaged by a pivoted detent, V, secured to the truck-frame in sufficiently close proximity. A spring, W, is secured also to the truck, and attached or connected to the drum *y* on rod T, the tend-

ency of which is to exert a strain upon the said drum and act to maintain the crank-bends of the shaft S in an upright or elevated position, and when the said bends or cranks are to be lowered for contact with the cams G the rod T is turned in a direction contrary to the tendency of the spring's action, thereby producing a slack in the cord or chain *x*, and permitting the cranks to lower themselves. The lever or detent V is then turned into one of the notches of the wheel U, thus holding the parts to the positions brought, and after the train has passed the said lever is released, whereupon the spring again restores the parts to their primitive positions.

It is evident that I am not confined to the use of the devices herein described for actuating the switch mechanism; but, as stated, I refer their employment.

The bed-plate B, it should be observed, is formed with a notch, *z*, by which an accommodation is afforded the stud *g* on plate D to allow a sufficient degree of movement back and forth of the several parts in the opening and closing of the switch.

The operation is as follows: On contact of one of the crank-bends of shaft S with a cam on one side of the mechanism, as seen in Fig. 1, the said cam will be thrown forward, and the connecting-rods F will be simultaneously actuated to operate the several parts in shifting the switch, the opposite cam being at this time brought to the position indicated in dotted lines. After the train has passed, the crank-bend of shaft S will come in contact with the opposite cam G, and thereby actuate the parts to move in an opposite direction, and thus restore the switch. The function of the slot *a* in the bar A is to permit sufficient movement of the plate D to effect the unlocking of the switch preliminary to movement of the said bar A for shifting the same, and also allows the bar E to operate the signal simultaneously with the unlocking of the switch. By virtue of the inclined sides of the notches *d d* in the stem of plate D the bolt N is caused to be forced inwardly on movement of the parts, the spring P acting to force it outward to engage the notches *b* of the bar A, thus locking the mechanism each time the switch is moved. On each movement the bar E will act to operate the signal in the manner set forth.

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

1. In an automatic switch, the combination of the movable bar having slot *a*, the plate D, having slot *f*, the link C, having studs *i i*, the connecting-rods, and cams G, all arranged and operating substantially as described.

2. In an automatic switch, the combination of the bed-plate having notch *z*, the movable bar having slot *a* and notches *b*, the plate D, having slot *f* and notches *d*, and provided with stud *g*, the links C, having each the studs *i i*, the connecting-rods, cams G G, and the spring-actuated bolt adapted to engage the

notches of the movable bar, substantially as set forth and described.

3. The combination of the links having each the studs *i i*, the plate D, constructed as described, the cams recessed to form the lugs *s s*, and the sectional connecting-rods, all arranged substantially as described.

4. The combination, with the bar A, having slot *a*, and the plate D, having stud *g*, of the bar E, having eye *m* and shoulder *n*, and the signal-staff connected to the end of said bar, substantially as shown, and for the purpose described.

5. In an automatic switch mechanism, the combination, with the bars A and E, links C C, and plate D, of the signal-staff L and the hand-lever R, secured thereto, substantially as described.

6. In an automatic switch, the combination of the bed-plate B, the links pivoted thereto, and having each the studs *i i*, the plate D, and bars A and E, constructed as described, the signal-staff, the spring-actuated bolt N, the connecting-rods, and the cams G, all arranged and operating substantially in the manner set forth and shown.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

CHAS. CASS.

Witnesses:

SANFORD KIRKPATRICK,
A. J. STEPHENSON.