

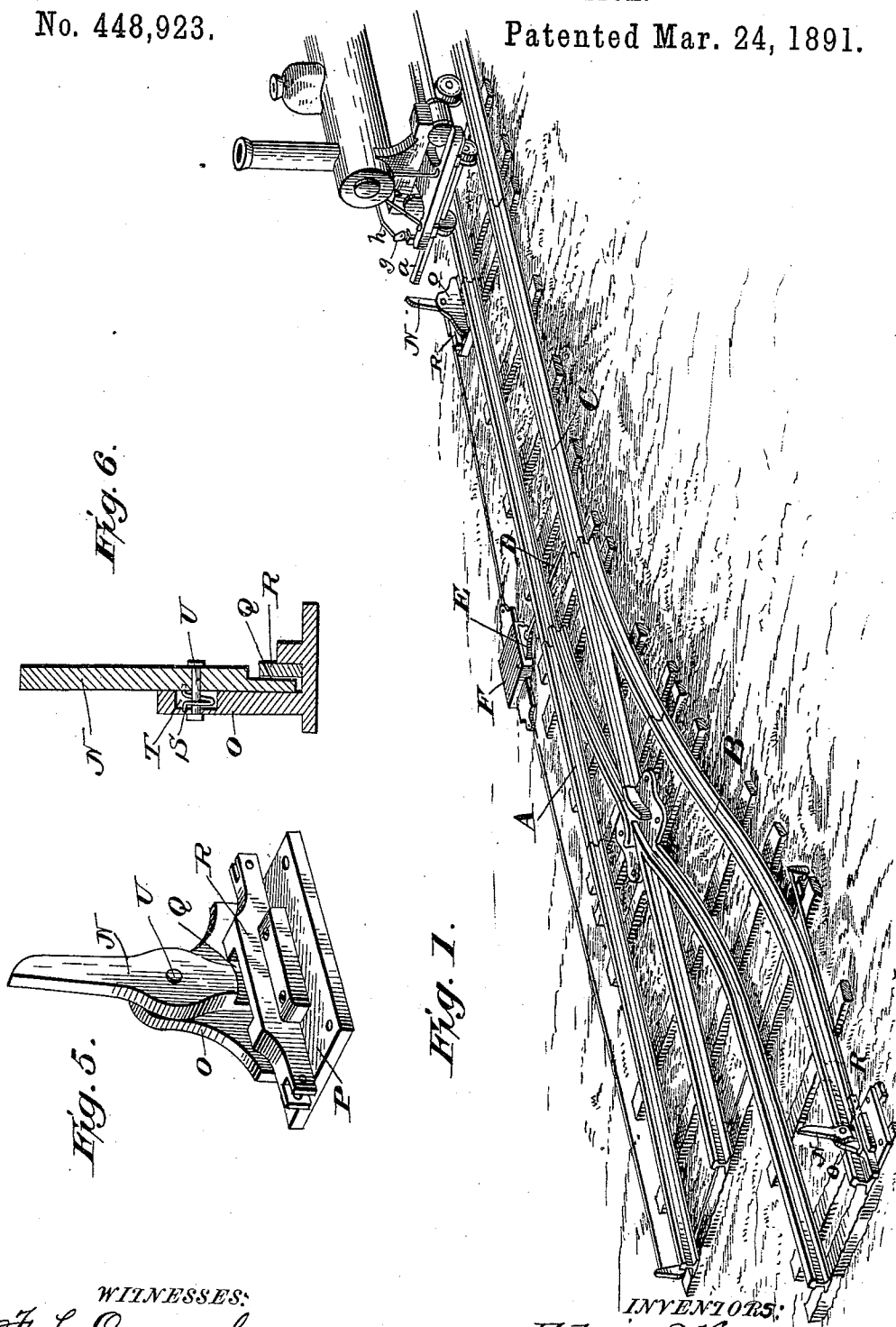
(No Model.)

3 Sheets—Sheet 1.

E. S. KASE & A. F. BORDEN.
AUTOMATIC RAILROAD SWITCH.

No. 448,923.

Patented Mar. 24, 1891.



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Fig. 2.

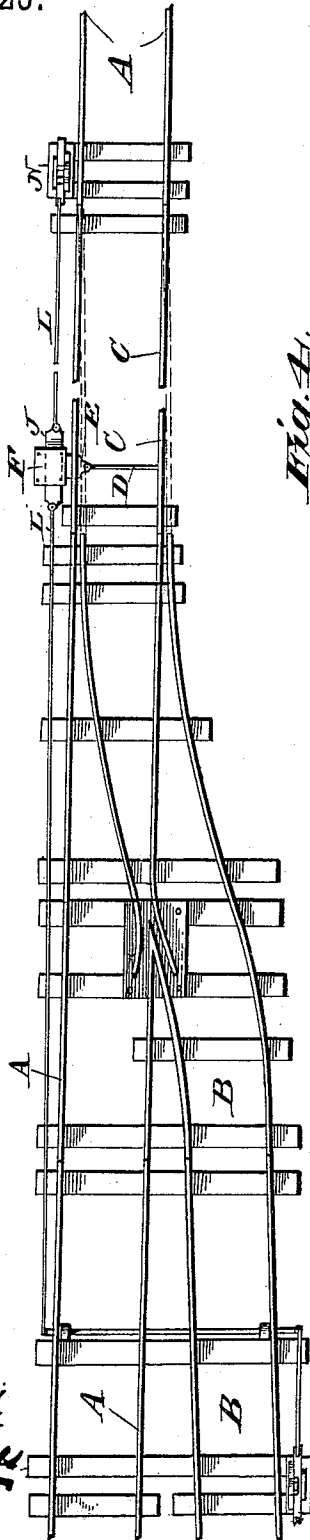


Fig. 4.

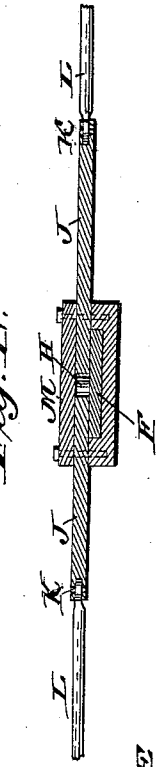
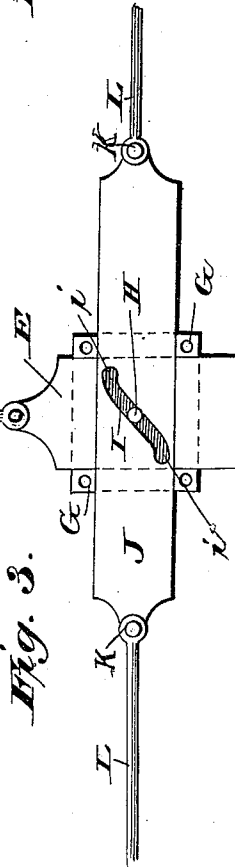


Fig. 3.



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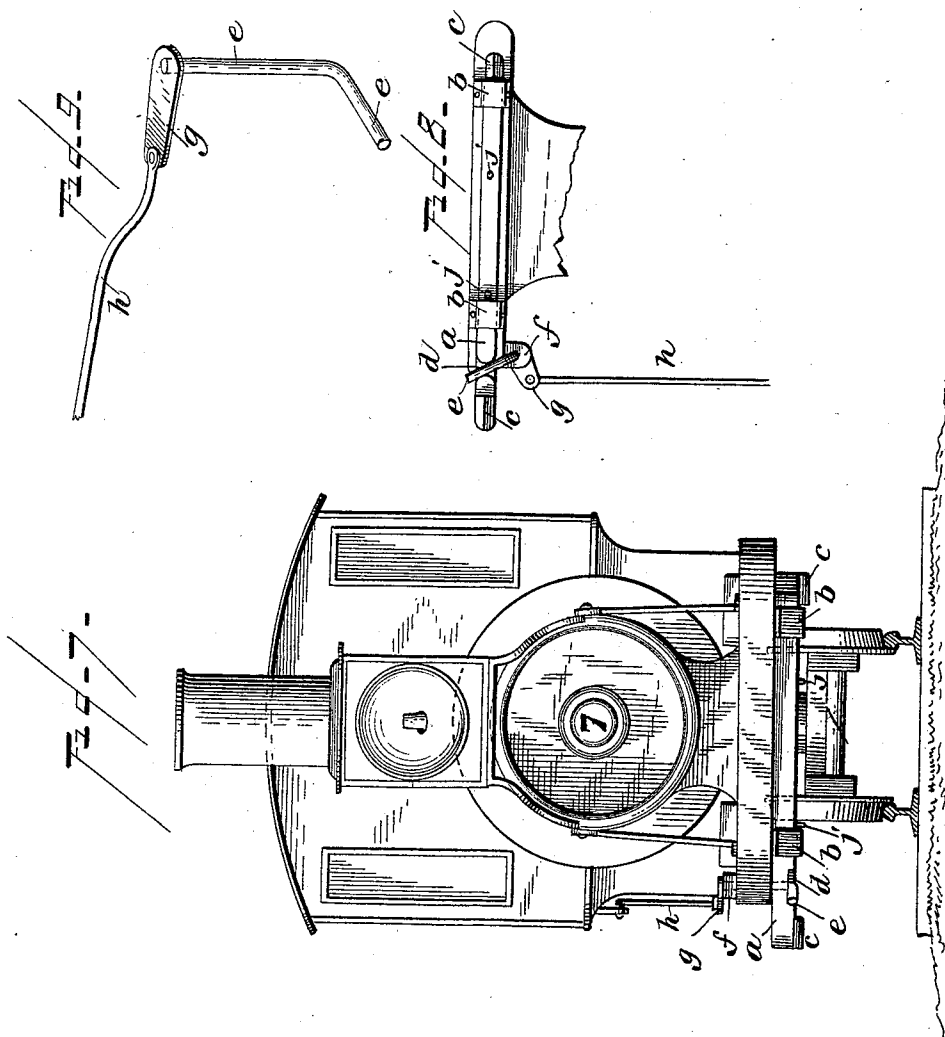
(No Model.)

3 Sheets—Sheet 3.

E. S. KASE & A. F. BORDEN.
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UNITED STATES PATENT OFFICE.

EDWIN S. KASE AND ALBERT F. BORDEN, OF DANVILLE, PENNSYLVANIA.

AUTOMATIC RAILROAD-SWITCH.

SPECIFICATION forming part of Letters Patent No. 448,923, dated March 24, 1891.

Application filed November 28, 1890. Serial No. 372,890. (No model.)

To all whom it may concern:

Be it known that we, EDWIN S. KASE and ALBERT F. BORDEN, both residents of Danville, in the county of Montour and State of Pennsylvania, have invented certain new and useful Improvements in Automatic Railroad-Switches; and we do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

Our invention has relation to that class of railway-switches which are operated automatically by the train through the medium of a shifting device attached to the engine in such a way that it may readily be manipulated by the engineer; and it consists in the improved construction of the switch appliances, as hereinafter more fully set forth, whereby we greatly simplify the construction of the switch mechanism, so that it shall not be liable to get out of order, but will operate with absolute certainty and security at all times.

In the accompanying drawings, Figure 1 is a perspective view of a railway track and train equipped with our automatic switch. Fig. 2 is a plan view of the switch proper with its connecting main and branch line or siding. Fig. 3 is a plan of the device for operating and locking the switch, the top plate or housing having been removed. Fig. 4 is a vertical sectional view of the same device, but with the top plate in position. Fig. 5 is a perspective detail view of the switch-lever and its attachments. Fig. 6 is a transverse sectional view of the same on a vertical plane through the middle of the lever. Fig. 7 is a front view of the engine, showing the location and arrangement of the sliding shifting-bar. Fig. 8 is a view of the underside of the same, and Fig. 9 is a detail view of the elbow-lever which operates the sliding shifting-bar.

Like letters of reference denote corresponding parts in all the figures.

Reference being had to the accompanying drawings, the letter A designates the main track of a railway, B a branch track or siding, and C the switch, which is shown in full line as closed or aligned with the main track

and shown in dotted lines as open or set for the siding. A rod D connects the free end of the switch with a sliding plate E, located horizontally to one side of the track, but in close proximity thereto, said plate working in a box or casing F, which is suitably anchored on the road-bed or bolted upon the projecting ends of the cross-ties, said plate E being guided by the parallel sides G G of box F. This sliding plate E has an upwardly-projecting stud H, the object of which will be described presently.

Placed within the box or casing F a little above and at right angles to plate E is another plate J, the ends of which project at opposite sides of the box and are provided with couplings K for the attachment of a rod or rods L, connecting plate J with the switch lever or levers, as the case may be. This upper plate is slotted diagonally, as shown at I, to receive the stud H on plate E, said slot I terminating at opposite ends in an offset or locking-recess *i*. Plate J is covered by the housing-plate M, which forms a top or cover for the casing within which the plates E and J work, excluding snow and dirt from the interior of the box and effectually protecting the interior mechanism from injury and from being tampered with by unauthorized persons.

From the foregoing it will be seen that by sliding plate J forward and back plate E will also be moved forward and back, but at right angles to plate J, by the stud H, which plays in the diagonal slot I, and it will also be seen that after plate E has reached the end of the stroke, forward or back, it will be locked in place by stud H entering and engaging either one of the two offsets *i i* at the opposite ends of the slot, so that it will require considerable force to unlock or dislodge the stud from these recesses in pushing the plate, and with it the switch, back into its normal position.

Plate J is operated by means of one or more rods L, connecting it at one or both ends to one or more switch-levers N. The latter are pivoted upon uprights O, which are cast integral with or bolted upon bed-plate P, firmly anchored upon the road-bed or bolted upon extended ends of the cross-ties. The lower end of lever N plays loosely in a recess Q, cut out in one side of a block or bar R, which rests and

slides in a groove in the bed or base-plate P. Thus it will be seen that when the upper end of lever N is swung sidewise its lower end, after reaching the limit of its loose travel in the recess or cut-out portion of bar R, will strike one of the shoulders of this bar formed by the recess, and thereby shove the bar to one side or to the other, according to the direction in which the switch-lever is tilted. As bar R is connected to the sliding plate J of the switch-setting device by means of the connecting rod or rods L, it follows that plate J, and with it plate E and the switch, will be opened or closed according to the direction in which the upper end of the appropriate switch-lever N is moved.

In order to maintain lever N in an approximately vertical position when at rest or in its normal condition, a suitably-constructed spring S is inserted within a recess T in the face of the post or upright O, encircling the fulcrum-bolt U, on which the lever swings, one end of the spring entering a hole in the adjacent face of the lever. The tension of this spring is so adjusted that it will normally hold lever N in an upright position and bring it back into the same position after each operation.

For the purpose of operating the switch-lever, we provide the forward end of the locomotive under the bumper, with a transverse bar *a*, which slides in hangers *b b*, and has both ends beveled, as shown at *c c*. In the under side of this bar at one end is a notch *d*, which receives the free end of an elbow-lever *e*, having its bearings in brackets *ff*, fastened to one side of the engine-frame. The projecting upper end of the elbow-lever *e* has an arm *g*, fastened at right angles, the outer end of which is connected by a rod *h* to a conveniently-arranged lever (not shown in the drawings) within the cab. It follows that the elbow-lever *e* may be turned in its bearings by working the connecting-rod *h* forward or back, and as we have seen that the projecting lower arm of said lever engages the sliding bar *a* it also follows that said bar may be moved to one side or to the other, so as to project with one of its beveled ends *c* some distance beyond and to one side or the other of the engine. In order to limit the play of the sliding bar in its hangers and prevent it from being pushed out too far endwise, pins *j* are inserted through the bar, which will control its sliding motion in the hangers.

From the foregoing description, taken in connection with the drawings, the operation of an automatic switch will readily be understood. If it is desired to switch the train off the main line onto a branch track or siding, the engineer on the approach of his train to the switch pulls the lever in the cab, so as to slide bar *a* toward that side of the engine

where the appropriate switch-lever is located, and as the forward part of the engine ahead of the swiveled truck passes by lever N the laterally-projecting beveled end *c* of bar *a* will strike against the upper end of the lever and depress the same, thereby opening the switch, so that the train will be switched off onto the branch line. If it is desired to again reset or close the switch after the train has passed, this is accomplished by adjusting bar *a* so that it will operate another switch-lever N, placed some distance down the branch track and connected to the first-named switch by connecting-rods L, so as to replace the switch in its closed or normal position. Thus it will be seen that by a properly-arranged system of switch-levers connected by rods to the switch-operating devices the switch or switches may be opened and closed automatically by a passing train simply by the engineer manipulating the sliding bar *a* from his cab and causing it to project laterally to one side of the train or to the other, according to the location of the switch-lever which is to be moved. After the lever has been depressed by contact with the projecting end of the switch-bar on the engine the lever will of itself resume its normal upright position through the instrumentality of the spring S.

While we prefer to operate the switch-levers by means of a sliding bar on the front part of the engine manipulated by the engineer or fireman from the cab, it is obvious that other devices may be employed which will answer the same purpose in substantially the same manner without deviating from the spirit of our invention; and we desire it to be distinctly understood, therefore, that we do not limit or confine ourselves to any particular or specific mechanism for operating the switch-levers.

Having thus described our invention, we claim and desire to secure by Letters Patent of the United States—

The combination of the switch-lever, its upright or support having a recess near its upper end, a fulcrum-bolt passing through said upright and lever, a spring located in said recess and having its ends secured to the upright and lever, respectively, and a recessed bar sliding horizontally in a groove in the base of the lever-support and engaging loosely the lower end of the lever, substantially as described.

In testimony that we claim the foregoing as our own we have hereunto affixed our signatures in presence of two witnesses.

EDWIN S. KASE.
ALBERT F. BORDEN.

Witnesses:

ALEX. H. GROVE,
ROBERT ADAMS.