

(No Model.)

B. C. ROWELL.  
AUTOMATIC RAILWAY SWITCH.

No. 410,200.

Patented Sept. 3, 1889.

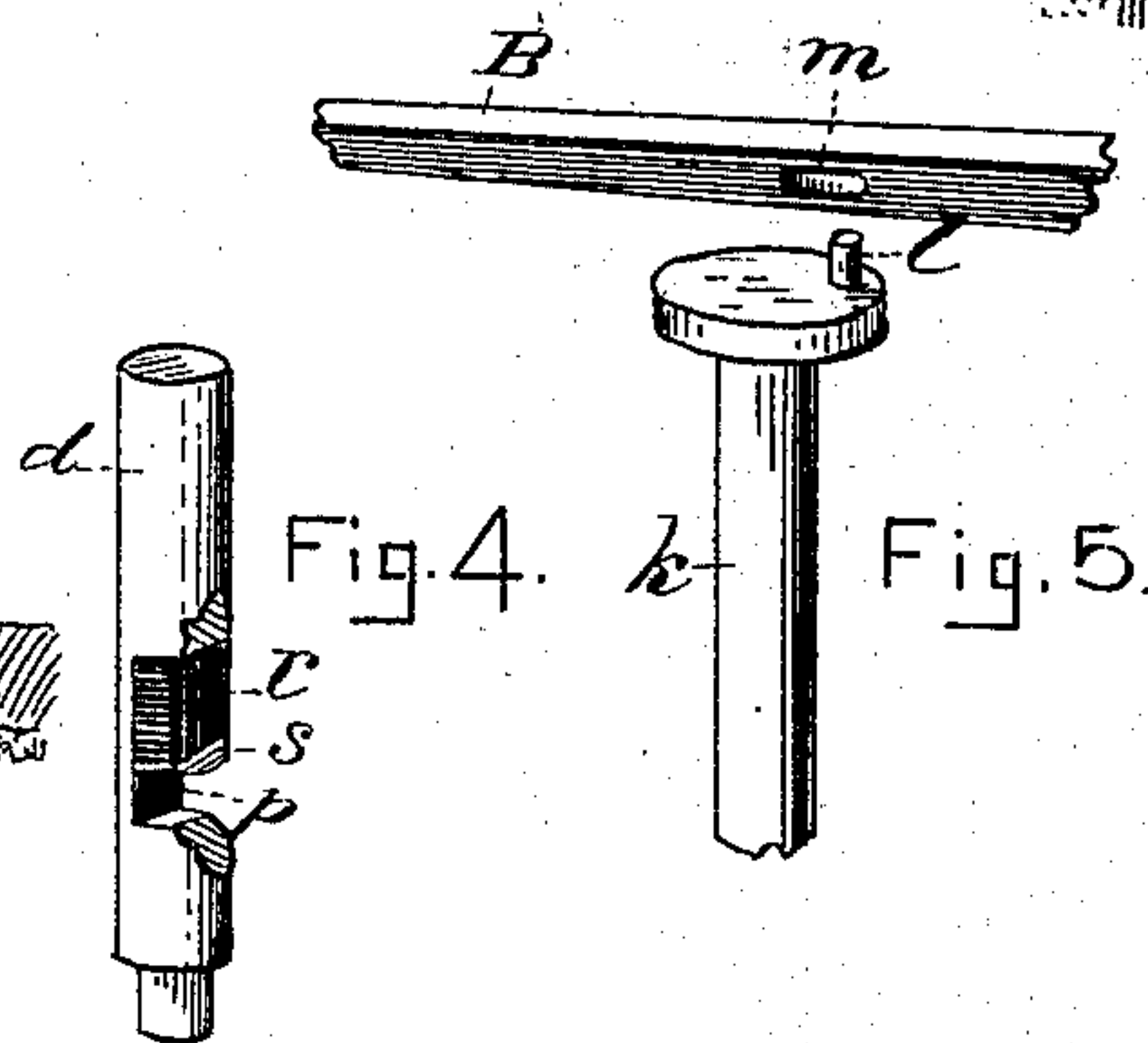
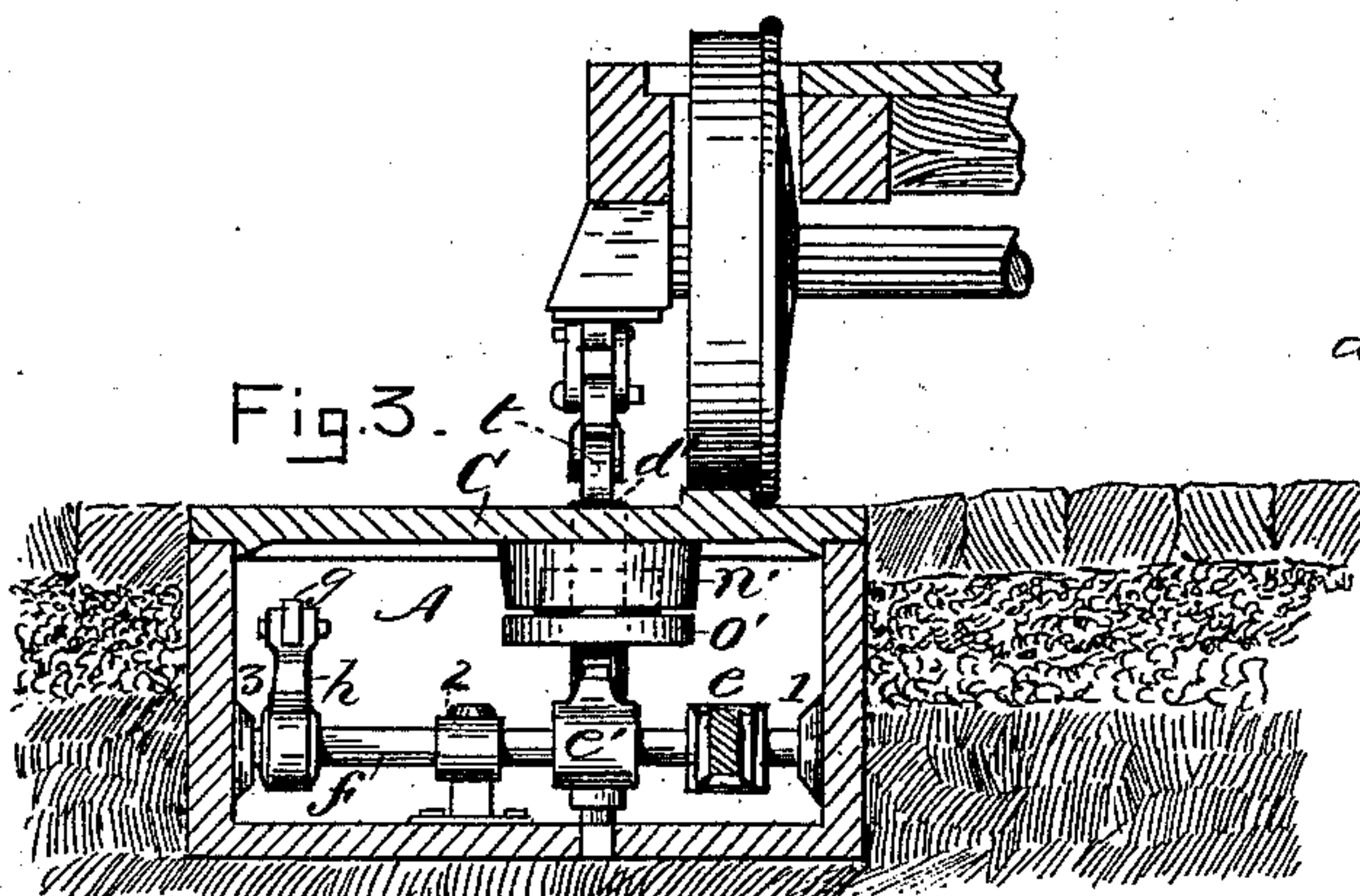
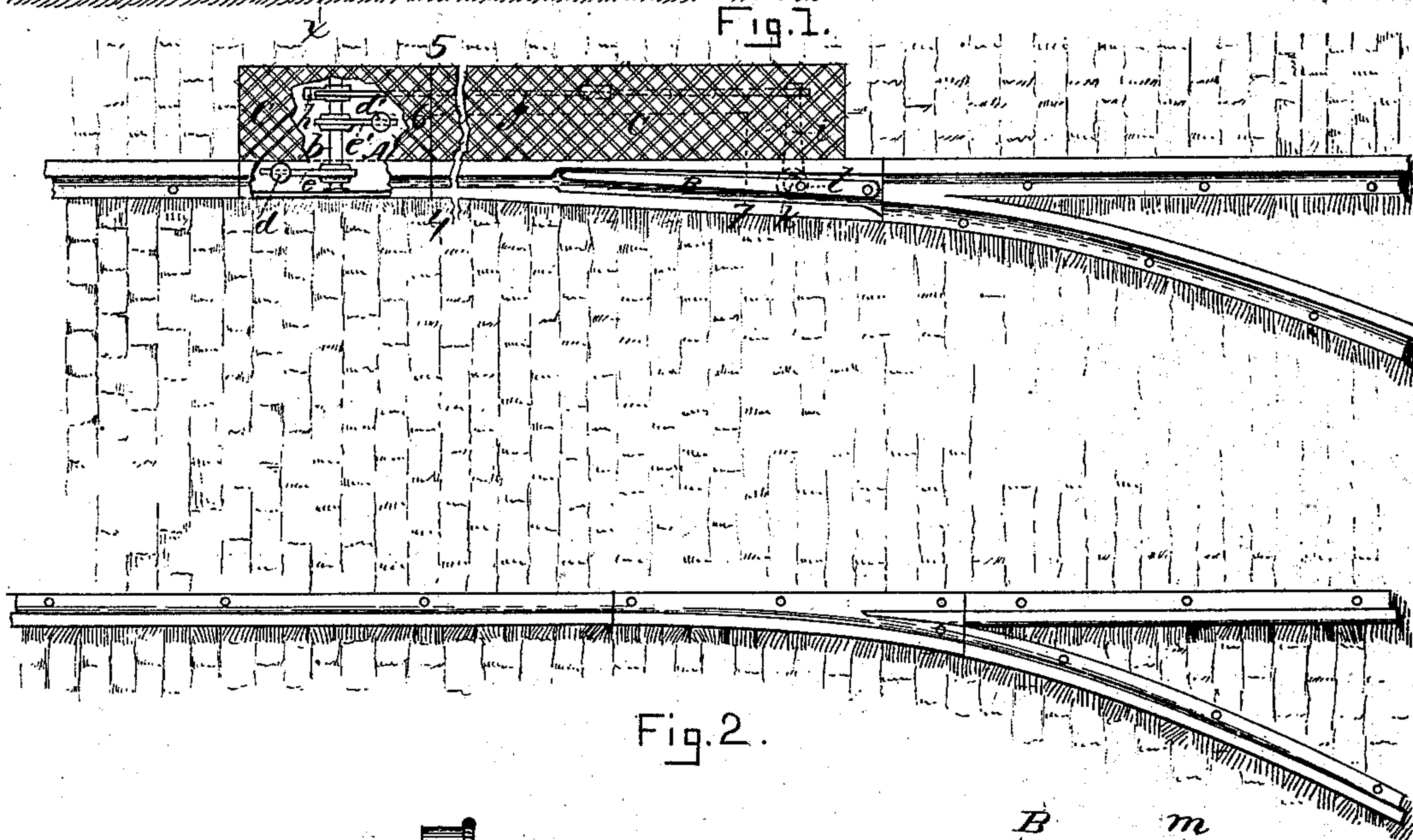
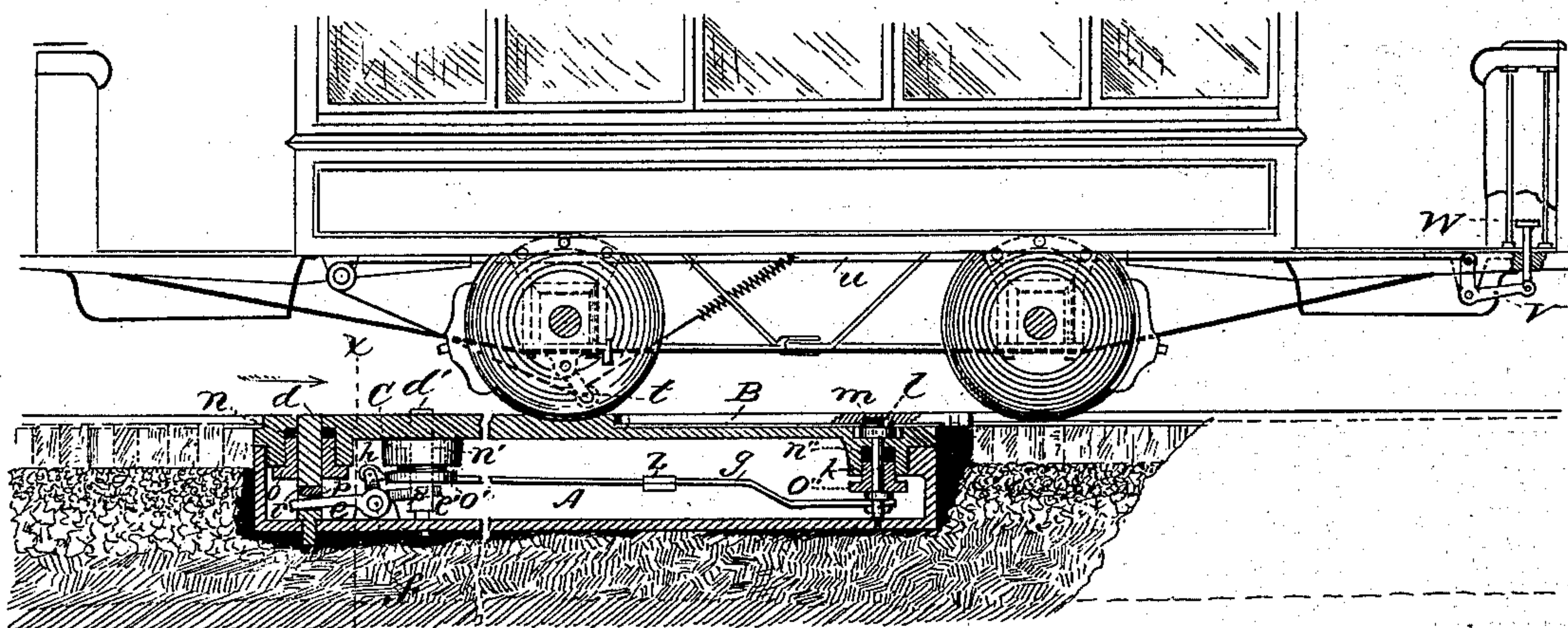


Fig. 5.

Witnesses  
Edwin B. Roberts  
Charles P. Wingator

Inventor  
Benton C. Rowell



# UNITED STATES PATENT OFFICE.

BENTON C. ROWELL, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO THE  
ROWELL AMERICAN SWITCH COMPANY, OF SAME PLACE.

## AUTOMATIC RAILWAY-SWITCH.

SPECIFICATION forming part of Letters Patent No. 410,200, dated September 3, 1889.

Application filed August 25, 1888. Serial No. 283,805. (No model.)

### *To all whom it may concern:*

Be it known that I, BENTON C. ROWELL, of Boston, in the county of Suffolk and Commonwealth of Massachusetts, have invented certain Improvements in Automatic Switches for Railways, of which the following is a specification.

My invention relates to improvements in the construction of automatic switches for railways; and it consists in constructing the several operating parts in such manner that they may be contained within a box or case which may be made water-tight, thereby preserving them from the effects of water or ice; also in the arrangement of the switching-levers so that the switch-rail invariably will be turned automatically in one direction whenever a car passes and at the will of the driver may be turned in the other direction. To accomplish this, I construct the top plate of the box which is to contain the switch-operating devices with openings just large enough to allow the lever-operating rods or plungers to pass through, and at each of these openings, upon the under side of the plate, I attach packing-boxes, through which the said plungers also pass. I make the opening for one of these lever-operating plungers through the rail which is upon the side next to the switch-box, for convenience, and so locate it that whenever a car passes the wheels upon that side of the car will bear upon and depress the end of the plunger, which projects through such opening. I make the opening for the other lever-plunger in the top plate of the switch-box upon one side or the other of the said rail, as the conveniences of construction in particular locations upon the railroad may require. The lever-plunger, which operates through this last-named opening, is depressed by means of a finger or lug, which can be thrown into proper position for that purpose by the driver or other person employed upon the car.

In the drawings forming a part of this specification, similar letters in the several figures indicate the same part of the apparatus.

Figure 1 shows a vertical longitudinal section of the switch-box along the left-hand rail when the car is moving in the direction indi-

cated by the arrow, and a car after it has passed over the switching-plunger, which sets the switch to turn the car to the right; Fig. 2, a plan view of the switch-box and its levers and their connection with the switch-rail, all occupying the same position as in Fig. 1, the top plate of the switch-box being broken away to show the rock-shaft and the levers connected therewith; Fig. 3, an enlarged transverse section of the switch-box on line *x x*, Fig. 1, and the lug for operating upon the plunger outside of the rail, the lug being attached to the journal-box of one wheel; Fig. 4, an enlarged detail of the construction of the lever-plunger and the elastic cushion for the upper side of the lever, one side of the plunger being broken away; Fig. 5, an enlarged detail of the switch-rail and the crank-spindle by which it is operated.

A is the switch-box, which contains the devices for operating the switch-rail B. C is the top plate of said switch-box; *d d'*, the lever-plungers; *e e'*, the rock-shaft levers operated thereby; *f*, the rock-shaft pivoted at 1 2 3. The rod *g*, pivoted to the arm *h*, upon the rock-shaft *f*, connects it with the switch-rail lever *i*, which, through its connection with the spindle *k*, operates the switch-rail B by means of the crank-pin *l*, working in the slot *m* in the said switch-rail.

*n n' n''* are stuffing-boxes upon the under side of the plate C, and through these the plungers *d d'* and spindle *k*, respectively, work.

In order to hold the packing in proper position within the boxes *n n' n''*, I use nuts *o o' o''* in connection with them.

The rock-shaft levers *e e'* engage with slots *p p'* in the respective plungers *d d'*, and to prevent the shock which would occur between the said plungers and levers in their operation if a rigid bearing were maintained between them I employ an elastic cushion *r*, Fig. 4, and to prevent too rapid wear I interpose a metal bearing *s*. The plunger *d*, and through it the lever *e*, will be operated by the wheels on the left-hand side of the car whenever one passes over the track, and, as will be readily understood by reference to the drawings, Figs. 1 and 2, when the end of the lever *e* is depressed the upper end of the arm



5 *h* will be thrown back to the position shown in Fig. 1, and at the same time, through the connecting-rod *g*, the end of the lever *i* will be pulled in the same direction, thereby turning the spindle *k*, and thus, by means of the crank-pin *l*, working in the slot *m* in the switch-rail B, it will be thrown into the position shown in Fig. 2, which will turn the car onto the right-hand track. When it is desired to turn the car onto the left-hand track, or to keep it in a straight course, as represented in the drawings, the lug *t* is pulled down into a perpendicular or operative position (see Fig. 3) by means of the rod or chain *u* and bell-crank lever *v*, operated by the treadle *w*, or other convenient device, (illustrated in Fig. 1,) and to decrease friction I hang a small roll at the lower end of the lug *t*. A stop or some fixed rest should be provided, against which the lug *t* may bear when in operative position, and a spring *y* will pull up the said lug *t* into the position shown in dotted lines, Fig. 1, as soon as pressure is withdrawn from the said treadle. When the lug *t* is in the position shown at Fig. 3, it will strike the top of the plunger *d'* and depress it as the car passes, thereby depressing the end of the lever *e'*, which will cause the rock-shaft *f* to turn and throw the upper end of the arm *h* forward, and with it the connecting-rod *g* and end of the lever *i*, thereby turning the spindle *k* a short distance to the right, and with it the crank-pin *l*. This will throw the end of the switch-rail B to the right, or into a position opposite to that which it occupies in Fig. 2, thereby directing the car-wheels to the left hand or straight track shown therein.

40 For convenience of construction and manipulation I make the switch-box in two parts, dividing it at the line 4 5, and upon that portion of the top plate C from the end to the line 4 5, and through which the opening for the plunger *d* is made, I cast or otherwise secure a raised portion to serve as the rail for that distance. The portion of the switch-box through which the rod *g* passes may be made narrow and then enlarged at the other end to accommodate the lever *i* and spindle *k*, as indicated by dotted line 6 7, Fig. 2. The length of the rod *g* may be adjusted by a right and left hand nut *z*.

55 For the lower bearings of the plungers *d d'* and spindle *k*, I drill holes in the bottom of the switch-box, and these holes will also serve to drain off any small amount of water that may leak through the joints of the box. The length of the switch-box between the opening for the plunger *d'* and the point of the switch-rail B must be a little greater than the dis-

tance between the centers of the two axles of the trucks, when the lug *t* is attached to the axle-box of one of them, in order that, when required, the lug *t* will depress the plunger *d'*, and thereby turn the switch-rail before the forward wheel reaches the point of that rail.

My improved construction of automatic switches, when used upon horse-railroads, obviates the annoyance and disadvantage of turning the horses to one side or the other, incident to the tilting-platform switch, and it may also be used with equal advantage and success where any other motive power is employed to propel the cars.

Heretofore the operating mechanism of automatic switches has been arranged in a casing through which the openings for the externally-projecting parts have been large and unprotected against the ingress of water, and for this reason it has been necessary to provide an outlet from such chambers to drain the water therefrom, and in the winter-time great annoyance and trouble have been caused by reason of the water freezing therein. By my improved construction I make such casings or chambers water-tight and avoid all such difficulties.

I claim—

1. In an automatically-movable railway-switch, a water-tight casing enveloping and containing the switch-operating devices, and provided with packing-boxes through which the externally projecting or actuating parts of the mechanism operate, substantially as described, and for the purpose specified.

2. In an automatically-movable railway-switch, one or more upwardly-projecting actuating-plungers connected with switch-operating levers *e* by elastic bearings, substantially as described, and for the purpose specified.

3. In a railway-switch, a rotating spindle having a disk upon its upper end provided with a crank-pin thereon, combined with a slotted switch-rail to be operated thereby, substantially as described.

4. In an automatically-movable railway-switch, the combination of one or more upwardly-projecting actuating-plungers having elastic bearings upon the intermediate switch-operating mechanism, and a rotary spindle provided with a crank-pin at its upper end engaging with a switch-rail, substantially as described.

BENTON C. ROWELL.

Witnesses:

ODIN B. ROBERTS,  
CHARLES P. WINGERTER.