(No Model.)

2 Sheets—Sheet 1.

S. GOODHUE.

Railway Switch.

No. 234,977. Patented Nov. 30, 1880.

Fig. 1.

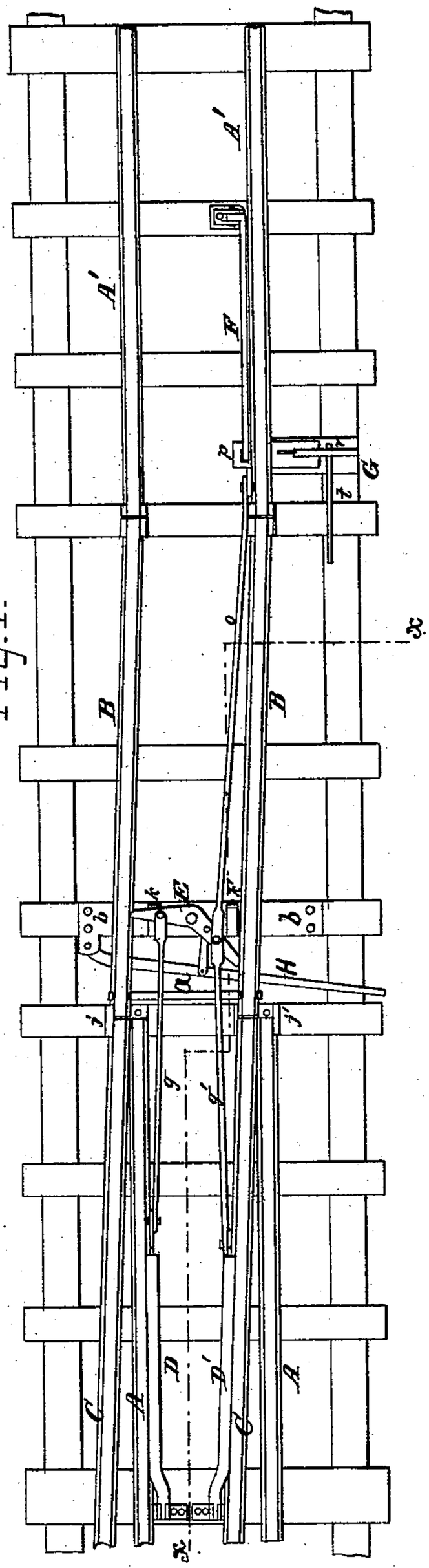


Fig. 2.

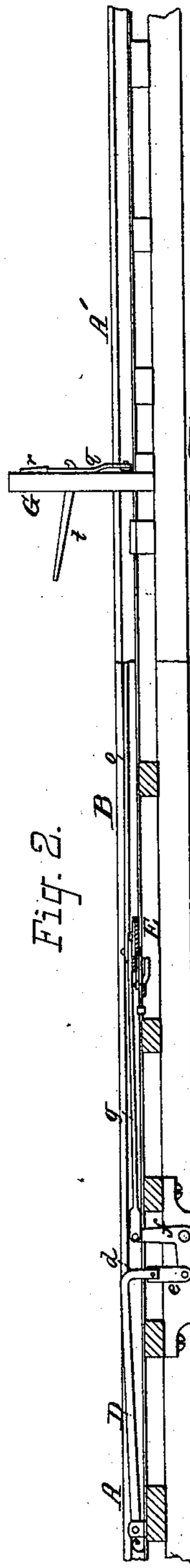
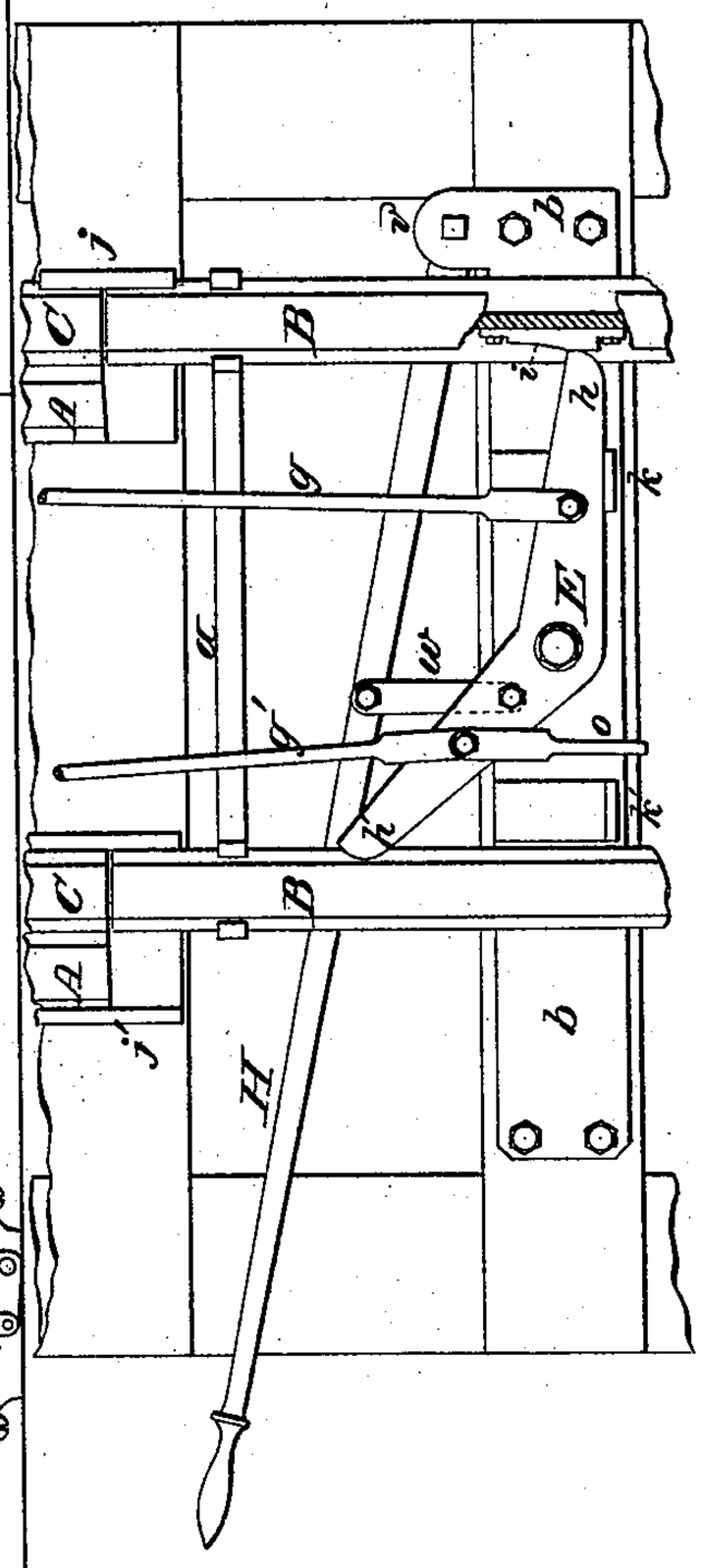


Fig. 3.



ATTEST:

Julian A. Hurdle.

A. M. Fraser.

INVENTOR:

Seth Goodhue,

By his Attys.

Burke, Fraser & Connell

(No Model.) 2 Sheets—Sheet 2.

S. GOODHUE.

Railway Switch.

No. 234,977. Patented Nov. 30, 1880.

Fig. 4.

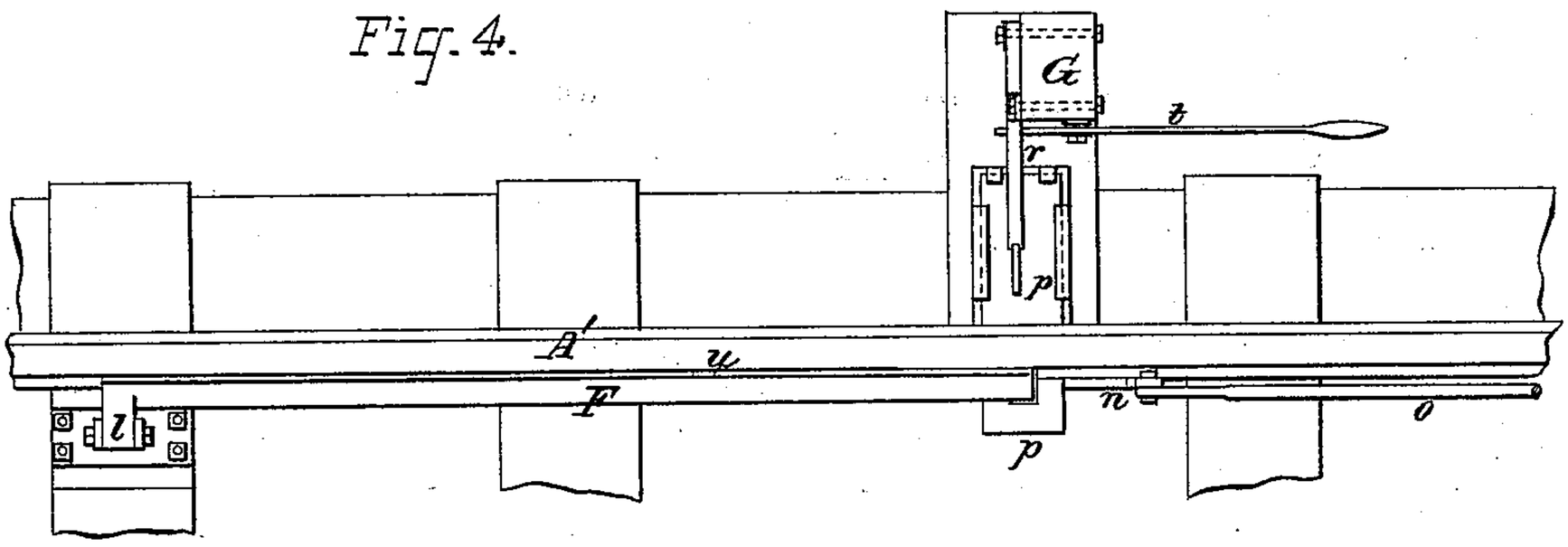


Fig. 5.

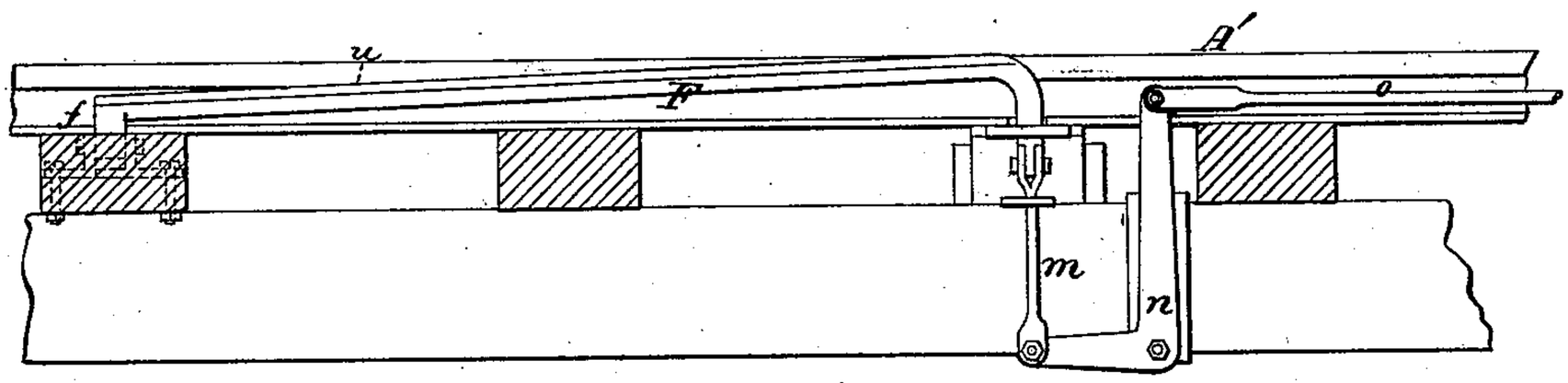


Fig. 7.

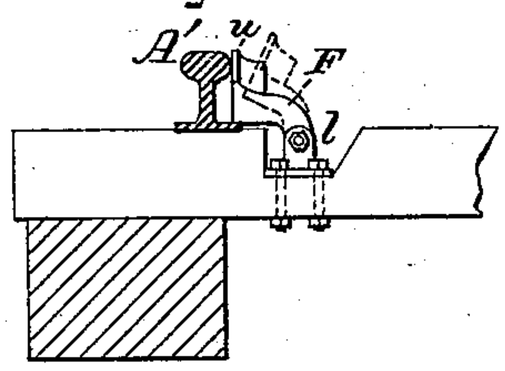
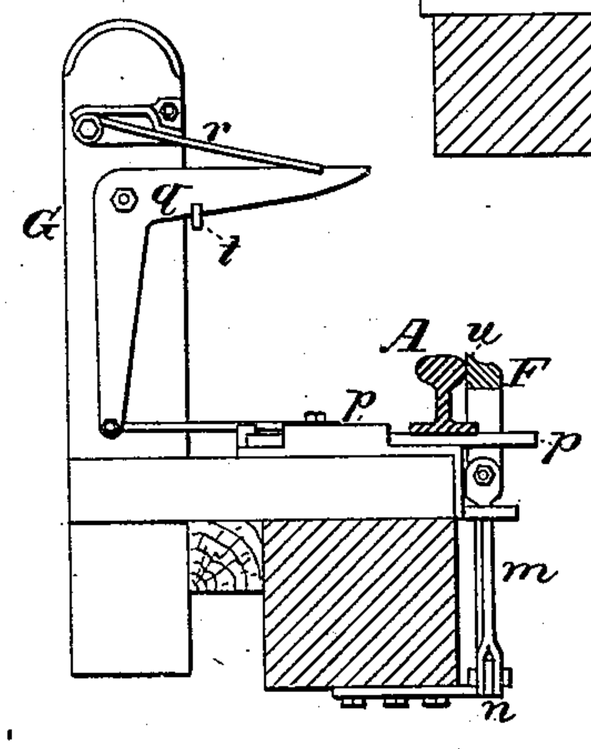


Fig. 6.



ATTEST:

Julian A. Hurdle.

A. M. Fraser.

INVENTOR:

Seth Goodhue,

By his Atty's-

Burke, Fraser & Connett

UNITED STATES PATENT OFFICE.

SETH GOODHUE, OF WILMOT, NEW HAMPSHIRE.

RAILWAY-SWITCH.

SPECIFICATION forming part of Letters Patent No. 234,977, dated November 30, 1880.

Application filed June 15, 1880. (No model.)

To all whom it may concern:

Be it known that I, SETH GOODHUE, of Wilmot, in the county of Merrimack and State of New Hampshire, have invented certain Improvements in Railway-Switches, of which the following is a specification.

This invention relates, in the main, to automatic switches for railways, to be used in connection with sidings, the object being to provide against trains getting off the track and to insure their keeping the main track automatically. Provision is made, however, for throwing the train onto the side track by hand in case of necessity.

My invention consists in improved mechanism for accomplishing the desired objects, and not broadly in the application of the principle hereinafter described, as that has been accomplished before in various ways.

In the drawings, which serve to illustrate my improvements, Figure 1 is a plan of a switch embodying the same, and Fig. 2 is a partial vertical section on the line *x x* in Fig. 1 and a partial side elevation. Fig. 3 is a plan of the rail-shifting device on a larger scale. Figs. 4, 5, 6, and 7 are enlarged detail views, which will be referred to more particularly hereinafter.

In general my invention employs depression-levers arranged close alongside of the rails and adapted to be depressed by the wheel of the approaching locomotive. This depression acts, through rods and other mechanism, to shift the switch-rails into coincidence with the rails of the track on which the locomotive is approaching when moving in one direction, and to shift the switch-rails always into coincidence with the main track when moving in the other direction. Such an arrangement as above described has, however, been before employed, and I make no broad claim to it here.

Let A A represent the main-track rails adjacent to the free ends of the switch-rails B B, and A′ A′ the main-track rails adjacent to the pivoted ends of the switch-rails. C C represent the rails of a side track, with which the switch-rails may be brought into coincidence, as shown in Fig. 1. All of the above rails are, or may be, laid in the usual manner, the free ends of the switch-rails being connected by a tie or stretcher, *a*, and arranged, by preference, to play on a metal plate or plates, *b*, secured to a tie.

D D′ are depression-levers, the former arranged alongside of a main-track rail, A, and the latter alongside of a siding-rail, C. These are placed on the inside of the rail in an inclined position, as in Fig. 2, so that the flange of the wheel of a locomotive approaching the switch from that side will depress them if they be not already depressed.

Referring to Fig. 2, the lever D is hinged to a tie at *c*, and its turned-down extremity *d* is forked and pivoted to a link, *e*, which, in turn, is pivoted or jointed to the horizontal arm of a bell-crank lever, *f*. To the upright arm of this lever is jointed a rod, *g*, which extends forward and takes hold of one arm of a horizontal cam-lever, E.

The depression-lever D′ for the side track is provided with mechanism precisely like that just described, and its rod *g′* extends forward and takes hold of the other arm of the cam E.

The cam E is fulcrumed on a bolt or pin in the tie or in a plate on the same, (see Fig. 3,) and its rounded ends *h h′* are arranged to engage, when the rails are shifted, with beveled plates *i*, secured to the webs of the rails on the inside. One of these is shown in Fig. 3, the head of the rail being broken away for the purpose. Of course only one arm or branch of the cam E will be in use at one time, and the arms are slightly shortened, so that there will be a little lost motion, and the retracted arm will move out of the way before the other begins to take effect and move the rails.

At *j j′* I arrange stops to limit the throw of the rails when they are shifted, and I lock the rails in position when shifted by clamping one of them between a stop, *j*, and the extremity of the cam-arm. In Figs. 1 and 3 the rail is clamped between the arm *h* of the cam E and the stop *j*, and it will be seen that no lateral pressure of ordinary force can move the rails in either direction. The movement of the cam E is limited by the stops *k k′*.

As both of the depression-levers D D′ are connected together through the cam E, it will be seen that when one is elevated the other will be depressed, and the arrangement is such that D stands elevated when the switch-rails coincide with the siding-rails, and D′ stands ele-

vated when the switch-rails coincide with the main-track rails. Consequently when a train approaches the switch, either on the siding-rails or the main-track rails A A, the switch-rails will be set to coincide with the rails the train is on, and all danger of jumping the track will be avoided.

When a train is approaching from a direction opposite to that first described—that is, on the main-track rails A′ A′—mechanism for automatically shifting the switch-rails, where necessary, so that they will coincide with the main-track rails A A, and thus maintain the integrity of the main track, is provided. If, however, it be desired to shift the switch-rails so as to run the train onto the side track, this must be done by the switchman or attendant.

I will describe the mechanism for this purpose with especial reference to the last four figures, in which Fig. 4 is a plan, Fig. 5 a sectional elevation, Fig. 6 a transverse section, and Fig. 7 a detail view. These show on a larger scale what is shown to the right in Figs. 1 and 2.

F is a depression-lever of a peculiar construction, arranged close to one of the rails, A′. The rear or lower end of this lever is bent to one side, away from the rail, as shown in Figs. 4 and 7, and pivoted or hinged at *l*, preferably below the level of the rail-foot, the pivotal axis being substantially parallel with the line of the road. The front or higher end of the lever is bent down and hinged or pivoted to a link, *m*, the pivotal axis being also parallel with the line of the road. The lower end of the link *m* takes hold of the horizontal arm of a bell-crank lever, *n*, from whose upright arm a rod, *o*, extends to one arm of the cam E. When the flange of the passing wheel depresses the lever F the switch-rails are shifted, through the crank *n*, rod *o*, and cam E, in precisely the same way that the levers D and D′ accomplish the same result. Suppose, however, that the switch is so set (as in Fig. 1) as to throw the approaching train on the siding and the switchman wishes to enter it. He prevents the flange of the wheel from actuating the lever F, and thereby setting the switch for the main line, by throwing the lever out of the way of the same by means of the following-described mechanism:

The pendent front end of the lever F passes through an elongated slot in a plate, *p*, arranged to slide in keepers on a tie. By giving this plate a longitudinal movement the lever is turned over away from the rail on its pivotal points of attachment at the ends, the flange of the wheel passes between it and the rail, and the switch is not disturbed. A reverse movement of the plate *p* brings the lever back to its former position against the rail.

To actuate the plate *p*, I employ, by preference, the following-described mechanism: To a post, G, is pivoted or hinged a bell-crank lever, *q*, the pendent arm of which is connected with the plate P by means of a link or rod, while a spring, *r*, rests upon its horizontal arm. The normal tendency of the spring is to keep the lever F close up to the rail, and to turn it over away from the rail, as indicated by dotted lines in Fig. 7. I may employ a lever, *t*, arranged to take under the horizontal branch of the lever *q*, as shown.

To prevent the flange of the wheel from wedging the lever F away from the rail without shifting the switch, and to cause the said flange rather to gather the said lever up to the rail and hold it there, I provide the top of the said lever F with a slight rib or feather, *u*, on its edge next the rail. The wheel-flange runs on the lever outside of this feather, and thus keeps the lever in place. In lieu of the feather *u*, I may simply groove the top of the lever near its inner edge, and thus provide a channel for the flange to run in; or I may simply bevel it from the inner to the outer edge. Either of these constructions will serve the purpose more or less perfectly, but I prefer the first described.

In lieu of the slotted plate P, the link from the pendent arm of the bell-crank *q* might be arranged to extend under the rail and be hinged to the turned-down end of the lever F; but I prefer the construction shown.

The switch-rails may at any time be shifted by hand through the medium of a switch-lever, H, pivoted to a fixed point at *v*, and connected with the cam E by means of a rod or link, *w*.

I am aware that a depression-lever arranged to be depressed by the flange of the locomotive-wheel, and thus operate to shift the switch-rails, is shown in several prior patents, among which are Burnett's patent of January 7, 1862, and Bronson's, of June 11, 1878; and I am also aware that such a depression-lever, arranged to be moved laterally by the hand or foot out of the way of the wheel-flange, is not new, such a construction being shown in the patent of Bastright, dated December 30, 1879, and I make no broad claim to any of these features; but

What I do claim is—

1. In an automatic railway-switch, the combination, with the main track and siding rail, of the depression-levers D D′, the cam-lever E, the mechanism for connecting the depression-levers with said cam-lever, the stops *j j′*, the switch-rails B B, suitably connected together at their free ends, and the beveled plates *i*, all arranged substantially as and for the purposes set forth.

2. In an automatic railway-switch, the combination, with the main-track rails and the switch-rails and the cam-lever E, of the rod *o*, bell-crank *n*, link *m*, depression-lever F, hinged or pivoted at both ends on axes substantially parallel with line of the road, and the plate *p*, or its equivalent, for turning the lever F over away from the rail, all arranged substantially as and for the purposes set forth.

3. The combination, with the depression-lever F, pivoted at the ends, as shown, and provided with a feather or rib, *u*, of the lever *t*, bell-crank *q*, spring *r*, slotted plate *p*, and the connecting link or rod, all arranged substantially as set forth.

4. The combination, with the main-track, siding, and switch rails, of the depression-levers D D′, the cam-lever E, the mechanism connecting said cam-lever with the depression-lever, the depression-lever F, the mechanism for connecting said lever with the cam-lever E, the plate *p*, or its substantial equivalent, the bell-crank *q*, spring *r*, and lever *t*, all arranged to operate substantially as set forth.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

SETH GOODHUE.

Witnesses:
JOHN T. WOODBURY,
JOHN F. EMERSON.