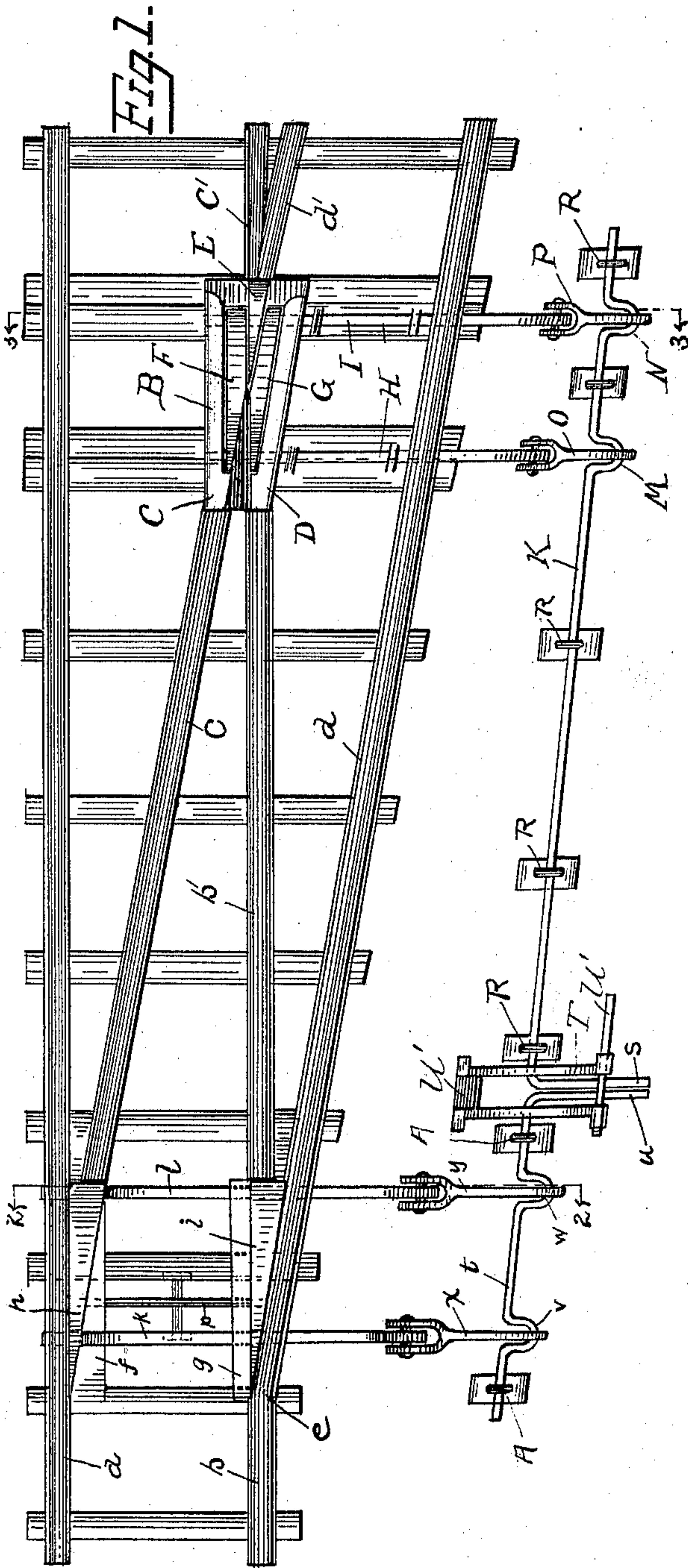


(No Model.)

M. McCULLY.  
RAILWAY SWITCH.

No. 591,051.

Patented Oct. 5, 1897.



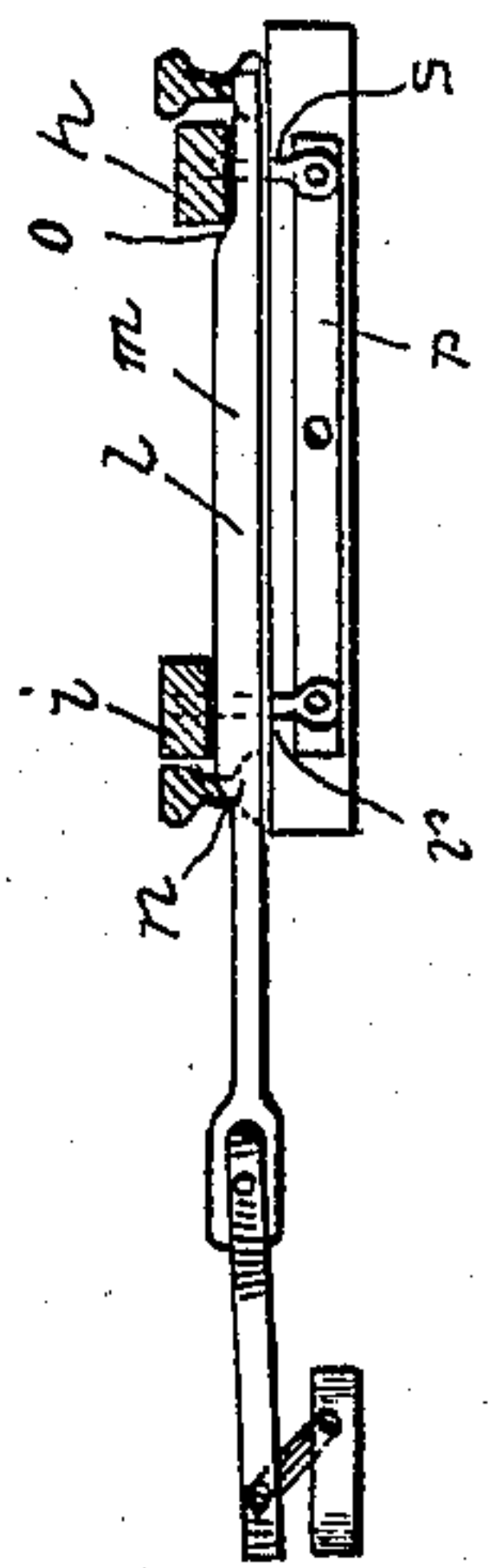
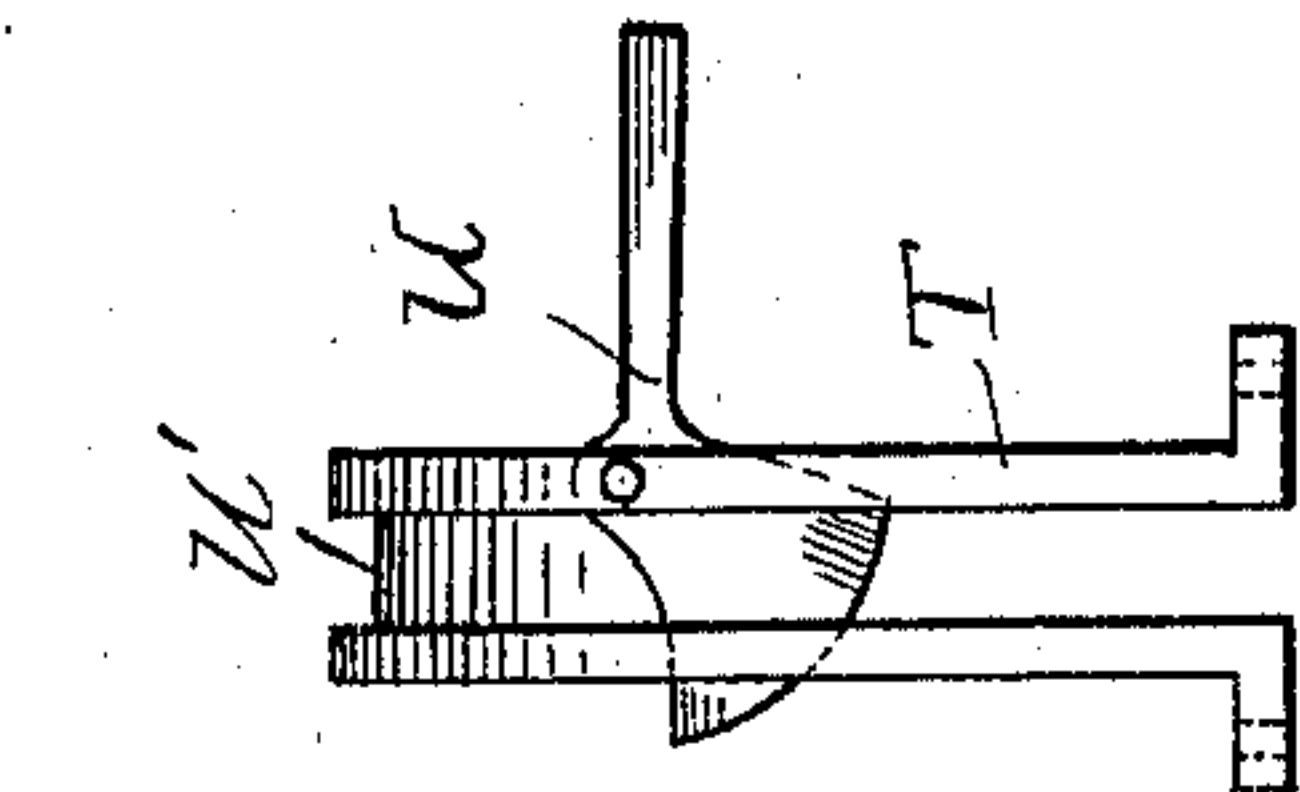
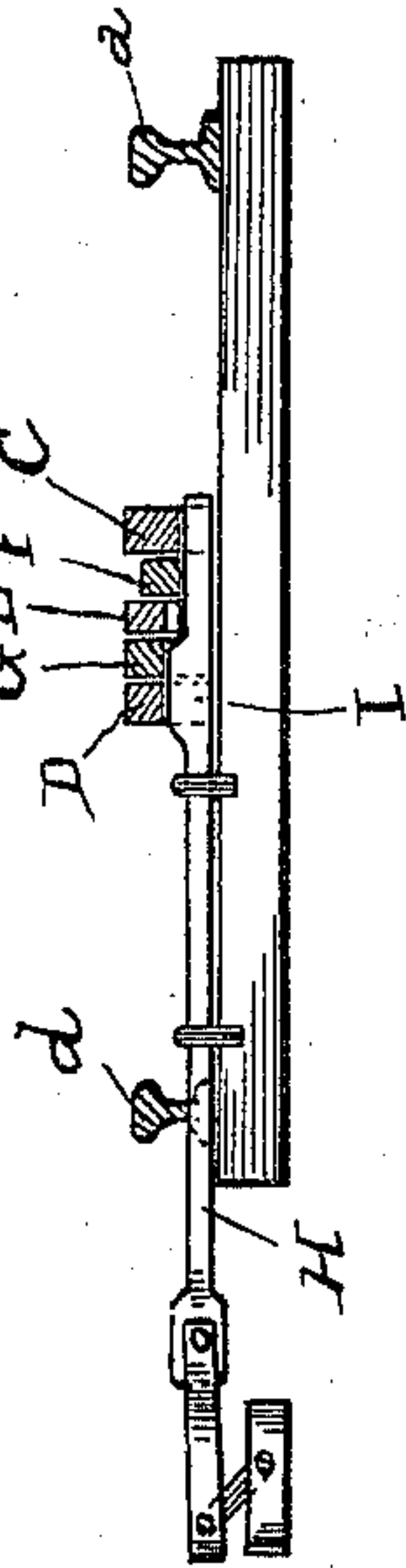
Witnesses.

Albert Popkins.  
C. Page Jones,

**Fig. 2.**

**Fig. 3.**

**Fig. 4.**



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# UNITED STATES PATENT OFFICE.

MILTON McCULLY, OF WEST MANSFIELD, OHIO, ASSIGNOR OF ONE-THIRD TO  
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## RAILWAY-SWITCH.

SPECIFICATION forming part of Letters Patent No. 591,051, dated October 5, 1897.

Application filed July 15, 1896. Serial No. 599,251. (No model.)

*To all whom it may concern:*

Be it known that I, MILTON McCULLY, a citizen of the United States, residing at West Mansfield, in the county of Logan, State of Ohio, have invented certain new and useful Improvements in Railway-Switches; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to switching mechanism in general, and more particularly to the construction and arrangement of the switch-tongues, the frog, and the mechanism for operating them.

The object of my invention is to provide such a construction as will insure the operation of the tongues and throw the car or other vehicle traveling on the road involving such switch mechanism upon the side-track or main track, as may be desired.

With this object in view my invention consists in employing a pair of switch-tongues, one of which, when in its operative position, acts to direct a car from the main track to a side-track, and the other, when in a similar position, insures the continuance of a car upon the main track. These tongues are in the form of vertical movable blocks operating in slots and provided with mechanism whereby they may be caused to alternately rise and fall in accordance with the desire of the operator.

A further feature of my invention is the peculiar construction of the switch-frog, which is provided with vertically-movable blocks which, operating similarly to the switch-tongues, act in conjunction therewith to insure the proper direction of the car when passing thereover.

In the drawings forming a portion of this specification and in which like letters of reference indicate similar views, Figure 1 is a plan view showing a section of main track and siding equipped with my improved tongues and frog, together with their operating mechanism. Fig. 2 is a section on line 2 2 of Fig. 1, showing the wedge-blocks employed in raising and lowering the switch-tongues. Fig. 3 is a section on line 3 3 of Fig. 1, showing a wedge-block and the accompanying mechanism

for raising and lowering the frog-sections. Fig. 4 is a detail showing a form of lock for retaining the wedge-operating lever in position when the main track is open.

Referring now to the drawings, *a*, *b*, *b'*, and *c'* represent the rails of the main track, leading from which is a siding comprising rails *c*, *d*, and *d'*, that portion of the rails *b* and *d* containing the bend *e* being formed integral.

At the points where the rails *c* and *d* meet rails *a* and *b* are arranged suitable casings *f* and *g*, having vertical triangular slots in which are adapted to rise and fall similarly-shaped switch-tongues *h* and *i*.

In order to operate the switch-tongues *h* and *i*, a pair of wedge-blocks *k* and *l*, one of which is shown in detail in Fig. 2, are passed laterally through the casings *f* and *g*, and working therein operate upon the lower surfaces of the tongues *h* and *i* to raise and lower them alternately. To cause the alternate raising and lowering, the block *l* is provided with a thickened central portion *m*, terminating in each end in an incline *n* and *o*, respectively, which said inclines alternately engage their respective tongues *i* and *h*. To insure tongue *i* falling when tongue *h* is raised, a lever *p* is pivoted central thereof and is provided at each end with a link *r* and *s*, connected with the tongues *i* and *h*, respectively, in order that when the tongue *h* is raised the tongue *i* may be drawn downwardly out of operative position.

I have found in practice that it is preferable to have a wedge-block at each end of the tongues *h* and *i* in order to raise them evenly and thus prevent wedging in their slots, and to reciprocate these wedge-blocks I provide a lever mechanism comprising a double bell-crank lever *t*, having an operating-handle *u*, the cranks *v* and *w* of said lever being connected with the wedge-blocks *k* and *l*, respectively, through the medium of links *x* and *y*, respectively, whereby when the handle *u* is operated reciprocatory motion will be transmitted to the wedge-blocks *k* and *l*, which in turn may raise and lower the switch-tongues *h* and *i*. The lever *t* is provided with a series of journals *A*, which may have any desired position.

Referring now more particularly to the frog



portion of my invention, it will be noted, in referring to Figs. 1 and 3, that I employ a casing B, upon which is formed projections C and D, which are in effect partial continuations of rails *c* and *b'*, the casing, which has furthermore upon its upper surface the usual triangular block E, which is in effect the continuation of the converging rails *c'* and *d'*. In order to bridge the space which is allowed between the blocks E and C and E and D for the passage of the wheel-flanges, the casing B is provided with two vertical slots, in which are adapted to alternately rise and fall blocks F and G, said blocks thus rotatably opening and closing the frog with respect to the main line and the sideway.

To operate the blocks F and G, wedge-blocks H and I, similar to blocks *k* and *l*, are employed. Said blocks when in one position engage the block F beneath its ends, and when in the opposite or retracted position engage the block G. If desired, a lever arrangement, similar to the lever *p*, and the links *r* and *s*, similar to those employed in connection with the switch-tongue, may be used to retract the blocks F and G alternately when the influence of the wedge-blocks H and I are removed.

To operate the wedge-blocks H and I, a bell-crank lever K, similar to the lever *t*, is employed, the bent portions M and N being connected with said blocks through the medium of links O and P. The lever K is provided with a suitable number of journals R, and at one end is equipped with a handle S, which said handle is preferably arranged adjacent the handle *u* of the lever *t*, whereby they may be operated by a single person.

In order to hold the handles *u* and S in the correct position to hold the main line open, I have arranged thereover a framework T, in which is pivoted a bell-crank lever U, having a broadened inner end, which may be operated to pass into engagement with the upper surface of the said handles and hold them in an inclined position. When the lever U is raised, the broadened end passes from engagement with the handles *u* and S, when the latter may be raised, and thus manipulate the wedge-blocks to open the side line.

A brace U' is arranged intermediate the uprights T, which brace not only contributes stability to the frame, but acts as a stop to the levers *u* and *s* in their rearward movement.

The operation of my device is as follows: It being desired to allow a car upon the main track to pass uninterruptedly thereover, the levers *t* and K are thrown into the position shown in the drawings, when the wedge-blocks *l* and *k* will pass from beneath the tongue *h* and engage the under side of the tongue *i*, when the latter will be raised and the former will be lowered through the lever *p* and connecting-links *r* and *s*. At the same time the wedge-blocks H and I are similarly

withdrawn from the block F, and, passing beneath the block G, raise the latter while the former drops. Thus it will be seen that the tongue *h* and block F being depressed and the tongue *i* and block G being raised there is an uninterrupted passage over the main line and the transit of a car thereover will be free. Conversely, when the levers *t* and K are reversely operated the wedge-blocks *k* and *l* pass from the tongue *i* to engage the tongue *h*, when the former will be lowered and the latter raised. At the same time the wedge-blocks H and I will engage block F, causing it to rise, and will release block G, allowing it to fall. Thus it will be seen that the tongue *h* will throw the flanges of the wheels onto the track-section *c* and that the tongue *i* will allow the opposite wheels to pass around the bend *e* and onto the side rail *d*. At the same time the block G will be lowered from the path of the wheels through the frog, and at the same time the block F will be raised to connect the block E on the casing B with the rail *c* of the siding, thus giving an unbroken track for the vehicle.

It will be readily seen that with this construction and arrangement the presence of snow, gravel, and other objectionable matter upon the switch-tongues and the blocks of the frog can in no way affect their operation, as these elements are made to snugly fit the openings in their casings, and all matter that may lie upon them will be pushed up and out of the way when they are opened. Moreover it will be noted that in my arrangement I provide a practically continuous track both on the main track and sideway, and thus prevent the disagreeable jarring and the accidental switching of a car due to the fact of the switch being part way open. Moreover, when the wheels reach the frog there is no possible chance for them to run on the wrong side of the guiding-block E, as is the case in the usual construction of frogs.

Having thus described my invention, its construction and operation, what I claim is—

In a switch system, the combination with switch-tongues and frog members adapted to rise and fall to open the main track or sideway, of wedge-blocks adapted to operate the tongues and frog members, bell-crank levers having connections with the wedge-blocks to reciprocate them, a frame inclosing the power ends of said levers, a bell-crank lever pivoted in the frame and having a broadened end adapted to normally lie in the path of the aforementioned levers whereby the latter may be retained in operative position.

In testimony whereof I affix my signature in presence of two witnesses.

MILTON McCULLY.

Witnesses:

M. E. CASTLE,

M. E. HATCHER.