

(No Model.)

S. T. MOCK
SWITCH.

No. 457,839.

Patented Aug. 18, 1891.

Fig. 1.

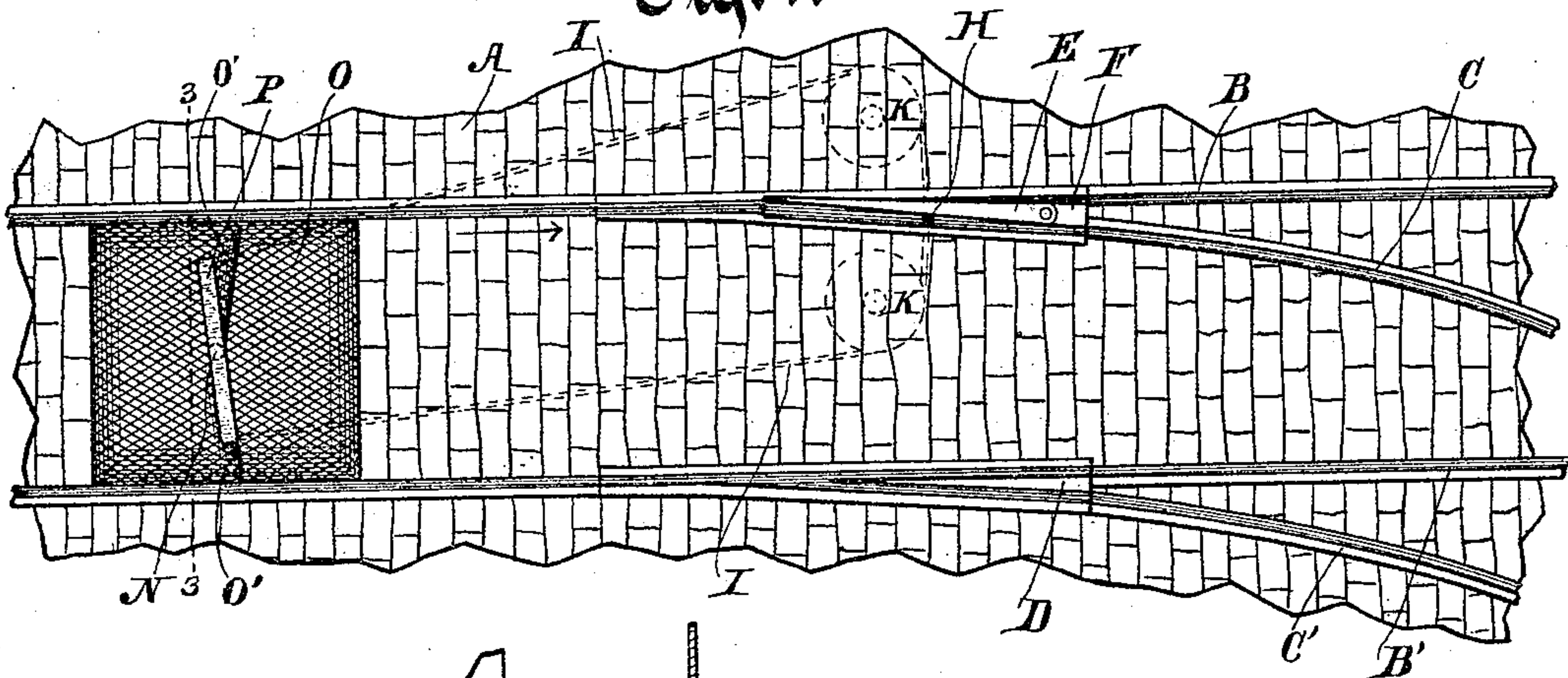


Fig. 2.

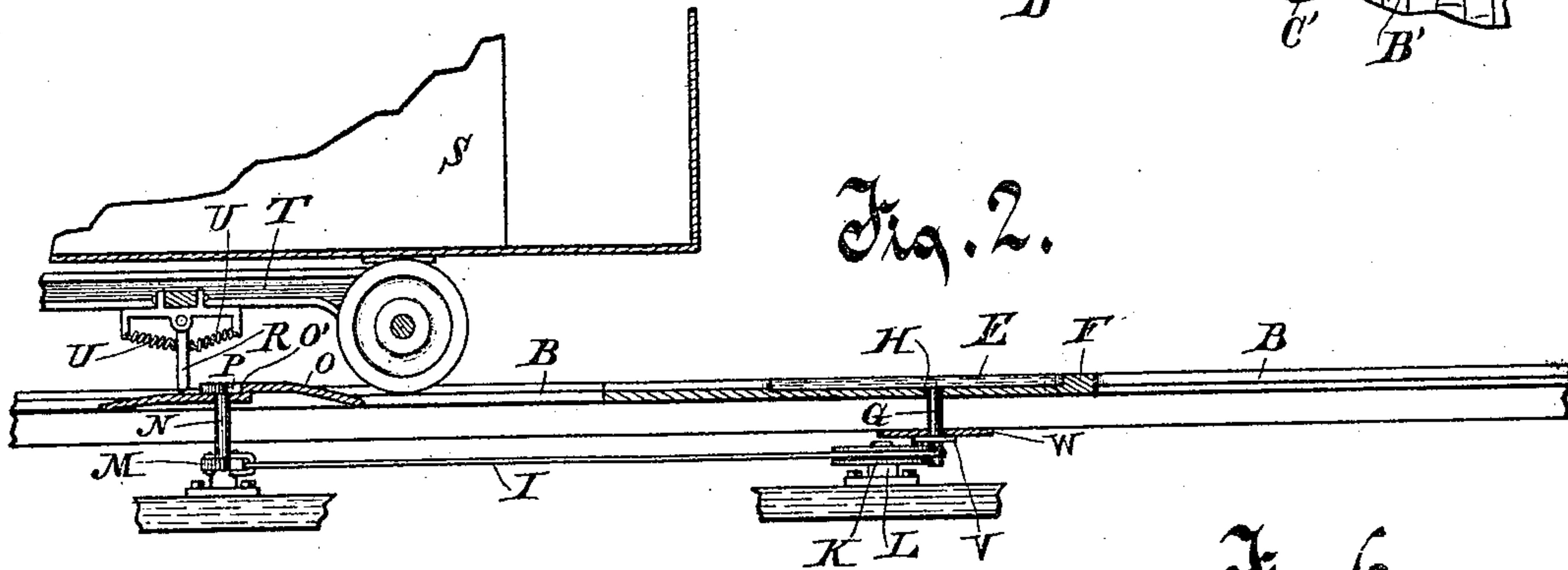


Fig. 6.

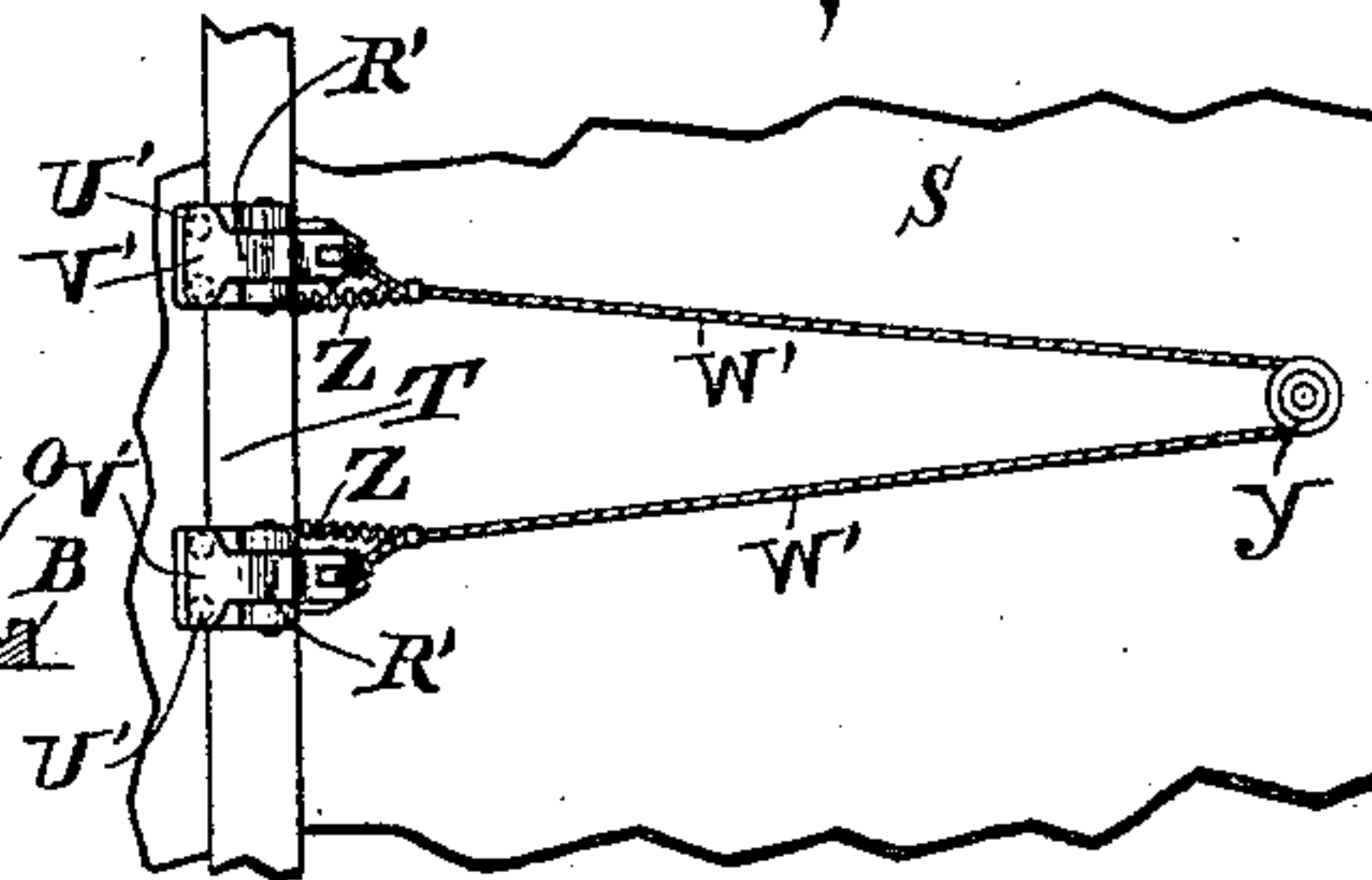


Fig. 5.

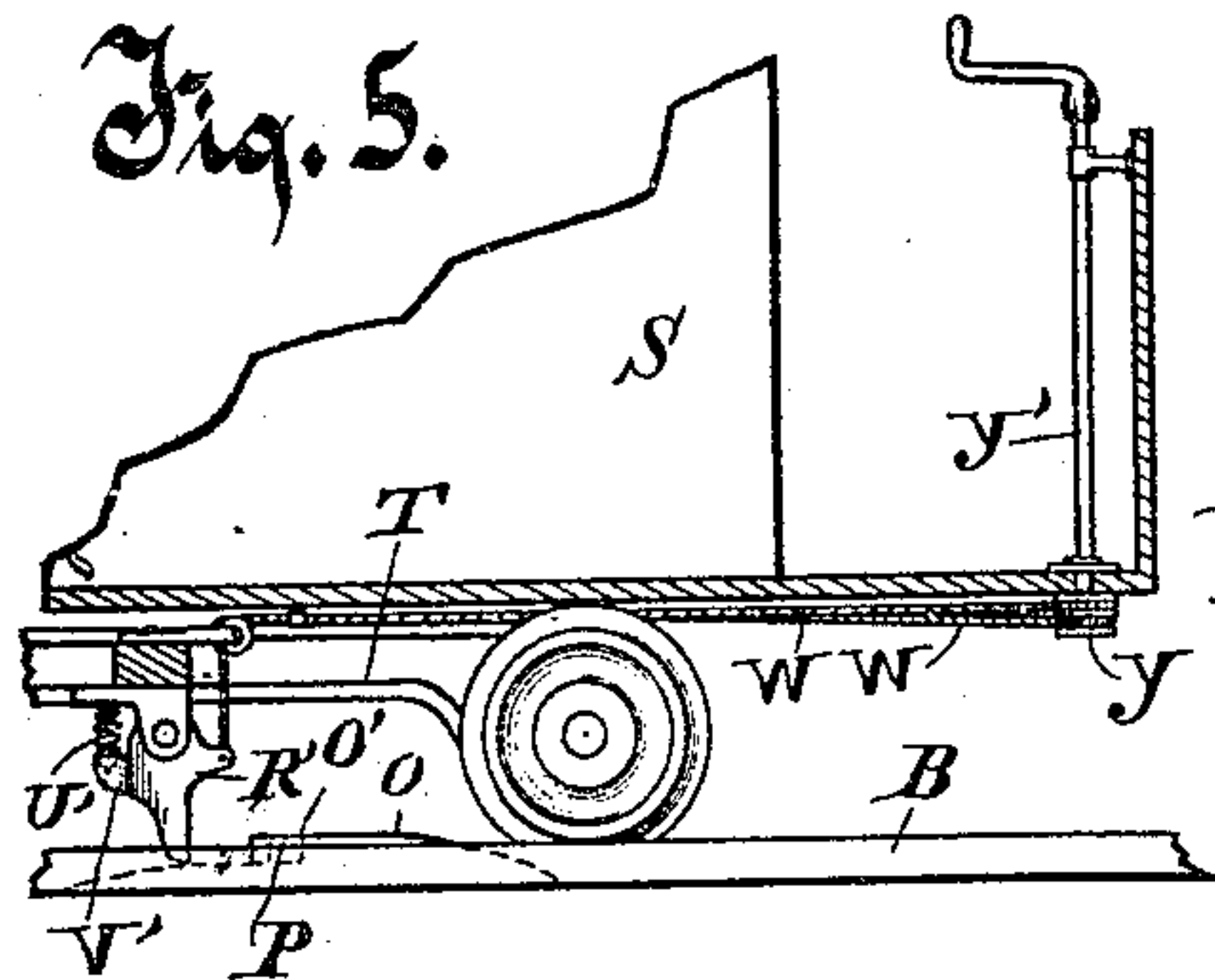


Fig. 3.

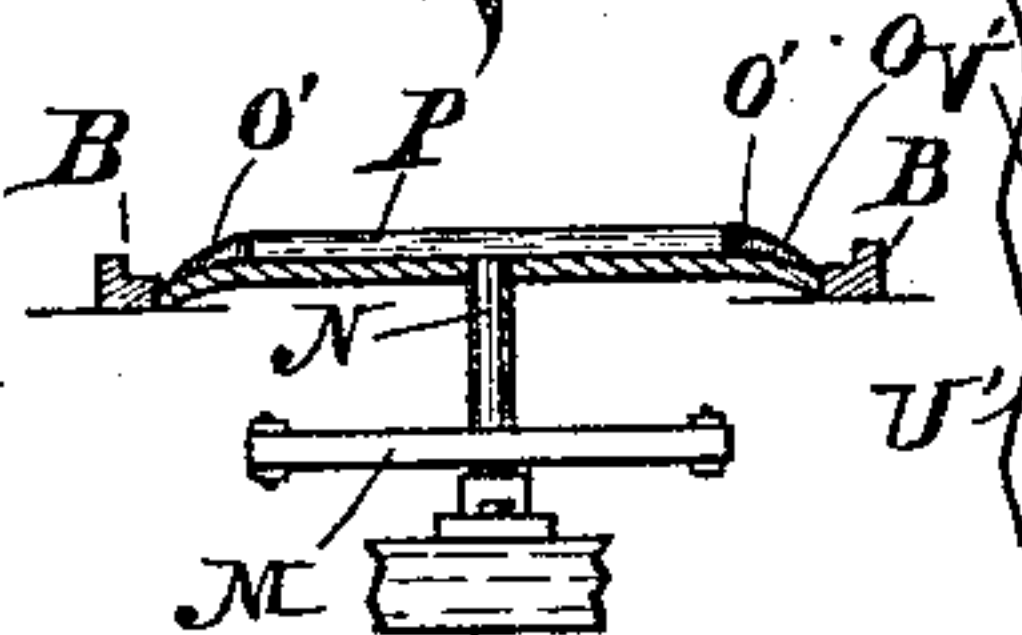
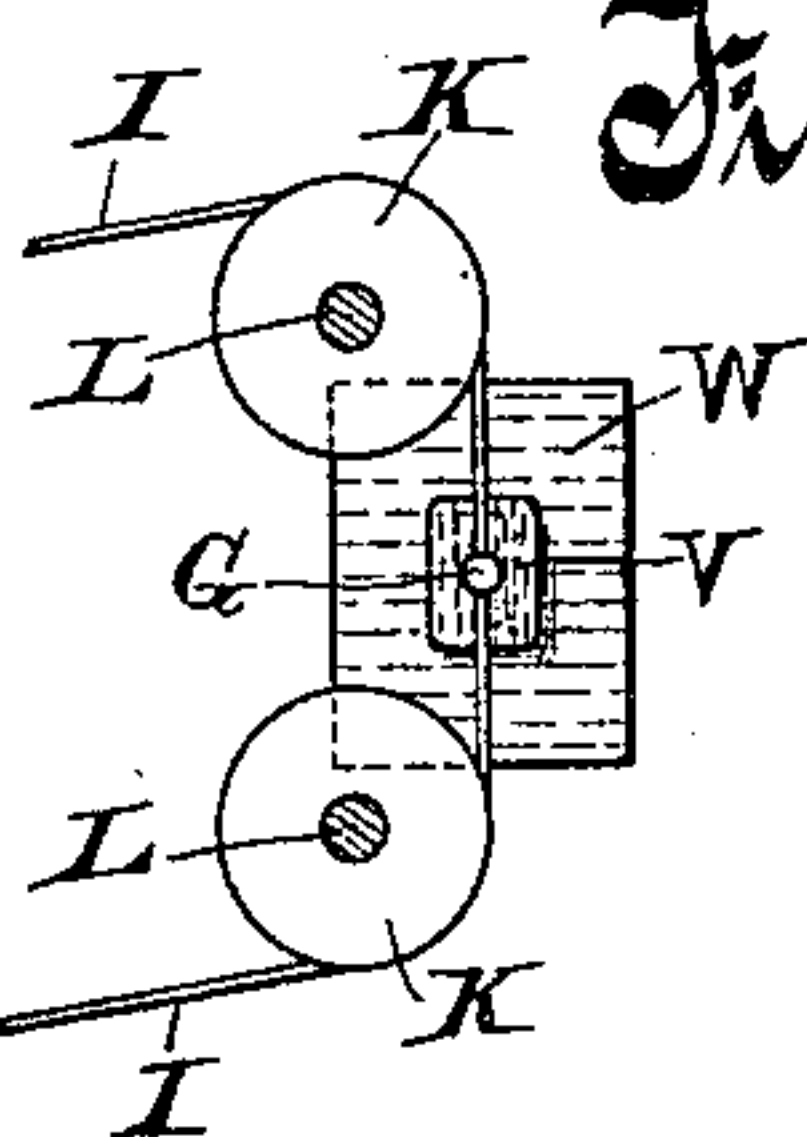


Fig. 4.



Witnesses.

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SAMUEL T. MOCK, OF MILWAUKEE, WISCONSIN.

SWITCH.

SPECIFICATION forming part of Letters Patent No. 457,839, dated August 18, 1891.

Application filed November 22, 1890. Serial No. 372,283. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL T. MOCK, of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented a new and
5 useful Improvement in Switches, of which the following is a description, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to a switch especially
10 adapted for use in connection with street-railway tracks either with horse-cars, cable cars, or electric cars, the switch being constructed and arranged to be shifted automatically by the approaching car.

15 In the drawings, Figure 1 is a top plan view of a fragmentary portion of the pavement of a street and of a car-track thereon with my improved device in connection therewith. Fig. 2 is a longitudinal vertical section of the
20 street and devices shown in Fig. 1, and in connection therewith a fragmentary portion of a car, partly in vertical section, having means for operating the switch. Fig. 3 is a transverse section of so much of my device as exists at line 3 3 of Fig. 1. Fig. 4 is a detail
25 of a portion of the switch-shifting device, shown in plan. Fig. 5 is a fragment of a car in vertical section having a modified form of device for operating the switch. Fig. 6 is a
30 view from the under side of the modified form of switch - operating mechanism shown in Fig. 5.

A represents the pavement of a street.

35 B B' are the rails of the main track of a street-railway.

C C' are the rails of a branch track of the railway.

D is a frog formed at the junction of the inner branch rail C' with the main rail B'.
40 The track is intended for use with a railway-car having wheels provided with flanges bearing against the inner sides of the rails.

E is a movable short section of a rail pivoted at one end near to and so as to form a continuous line with the branch rail C, the other
45 end of this short switch-rail E being made narrow, and so as to swing against the inside of the rail B and catch the flanges of the wheels of the car traveling on the rail B and turn
50 them onto the track C. The switch-rail E rests upon and is pivoted to a metal plate F, which plate is conveniently constructed in-

tegral with the rail B, forming the coterminous part of the track. The street pavement, the railway-track, including the main rails, 55 and the frogs are such as are in common use.

My invention relates to the means for shifting the switch-rail E, so that its swinging point may be against the rail C or a little distance therefrom, whereby the car running on
60 the track toward the right in the drawings would be permitted to run along on the main track or will be switched or shunted off onto the branch track according to the position of the switch-rail E. For the purpose of shift-
65 ing this switch-rail E the rail is provided with a rigid depending stud or post G, which passes movably through a short laterally-extending slot H in the plate F. Two short cables I I are
70 attached, one at each side, to the post G, and run therefrom in opposite directions laterally about the idle-pulleys K K, which are loose on short posts or arbors L L therefor, fixed to a permanent base in the shallow chamber there-
75 for beneath the pavement. These cables I I extend a distance in the chamber below the street-pavement to the respective arms of a bar M, fixed medially on an upright post N, supported and having its journal-bearings in a
80 fixed block on the bottom of the chamber below the pavement. The bar M is located below and between the rails of the track and at right angles thereto. The post N, near its upper end, passes through and has bearings
85 in a plate O, which plate is located on the pavement between the rails and rises centrally a little above the pavement, so that its top surface is about even with the top of the rails of the track. A cross-bar P, rigid on
90 the post N, is arranged above and parallel to the bar M, and is located in a lateral depression therefor in the plate O near a shoulder or step O' in the plate, permitting a limited amount of oscillation only to this cross-bar. This cross-bar P is located a little above the
95 level of the pavement, so that a projection on the car may strike it, which projection must not extend far enough downwardly from the car to be liable to strike the pavement itself or any slight objects, such as the branch rail
100 C, as the car passes over it. It is for this purpose that the plate O is elevated centrally beneath the cross-bar P, so that the cross-bar may be above the surface of the pavement,

and the plate O is so constructed as to provide a widened or extended elevated surface slightly above the street to afford a sure footing for horses, so that they will not be liable to trip on the otherwise isolated and raised cross-bar P.

A depending pin or arm R is hinged to the car S, preferably to the truck T, so as to swing toward the front and rear. This arm R is held yieldingly in a vertical position by springs U U, attached to it and to the car, which springs are of sufficient strength to hold the arm R in vertical position with such firmness as is necessary to shift the cross-bar P and the thereto-connected switch-rail E, and when the cross-bar and its rail are so shifted the springs yield sufficiently to permit the arm R to pass over the cross-bar and the shoulder O'. The yielding capability of the arm R allows it also to pass over any accidental obstruction on the track that projects upwardly far enough to come in contact with it. It will be understood that this arrangement for automatically switching a car from the main line onto a branch is intended and adapted for use only in connection with cars running in one direction—to wit, toward the right, as shown in Fig. 1—that for this purpose the cross-bar P and plate O are located at a little distance from and in front of the switch-rail E, so that the depending arm R on the car will strike the cross-bar and shift the switch-rail before the car reaches the switch. It must be also understood that the projecting arm R is located on the inner or right-hand side of the longitudinal center of the car, so as to shift the cross-bar into the position shown in Fig. 1 on those cars which are intended to be shunted onto the branch track, while on those cars which are to run directly through on the main track the projecting arm R is located on the other side of the car, so as to engage the outer or opposite end of the cross-bar P and shift the switch-rail E away from the track C.

For the purpose of holding the post G in a vertical position, a guard-plate V, secured rigidly to the post bears against the under side of a plate W, secured to the upper wall of the chamber, in which the pulleys K K are located, which plate W is provided with a short lateral slot, through which the post G passes movably.

In Figs. 5 and 6 a modified form of device for shifting the switch is shown, which is attached to the under side of a car, and is adapted for use with tracks having branch lines turning to the right and to the left, so that a car could be used on the track and switched off first toward the right and afterward toward the left. For this purpose two depending arms R' R' are required, which are both hinged to the under side of the car and preferably to the truck T, which arms are located at a little distance apart, one on each side of the center line of the track, and so as to be adapted, respectively, to engage

the opposite arms of the cross-bar P. These arms R' R' are so hinged to the truck as to swing freely limitedly to the front and to the rear. The arms extend downwardly sufficiently far when in their normal positions to engage the cross-bar P. Springs U' U', fastened at their upper ends to the truck T, project downwardly at the rear of each of the arms R', and their lower ends are received and bear loose in a socket therefor against a ledge V' on the arm R', whereby the arm is held yieldingly in a vertical position. Cables W' W' are attached at one end to forwardly-extending projections on the arms R' R', and run upwardly to the floor of the car over idle-pulleys, and thence forwardly to a wheel Y fixed on a cranked shaft Y'. This cranked shaft is preferably located at the platform of the car where it can be readily manipulated by the driver or operator of the driving mechanism. The cables W' W' are secured permanently to and wind on the wheel Y, so that by rotating the shaft Y' in one direction one of the arms I' will be swung upwardly forwardly, so as to pass over the shifting cross-bar P, or by rotating the shaft in the other direction the other arm R' would be raised, so as to pass freely over the cross-bar P. By this means the arms R' can either one of them be raised, permitting the other one to engage the shifting cross-bar, and thereby shunt the car in the direction desired. Retrieving-springs Z are secured at their rear ends to the truck T and at their front ends to the cables W' W', at a little distance in front of the arms R' R', whereby the cables are pulled back, taking up any weight of the slack of the cables, so as to permit the arms R' R' to swing freely into a vertical position by their own gravity after having been pulled forward by a cable W' after the cable has been let off of the wheel Y.

What I claim as new, and desire to secure by Letters Patent, is—

1. In connection with a railway-track and a branch track uniting therewith, a movable switch-rail, a thereto-affixed post passing through a slot therefor to a chamber beneath, cables attached thereto and running therefrom in opposite lateral directions about bearings, and then forwardly to an oscillating transverse bar fixed on a post, a second transverse oscillating bar secured rigidly to the post and located above the surface of the ground between the rails of the track, and means attached to a moving car for engaging and shifting the upper cross-bar, substantially as described.

2. An automatic railway-switch comprising a shifting switch-rail, cables located below the track connected to the shifting rail and running laterally therefrom in opposite directions about bearings and thence forwardly, a cross-bar located between the rails of the track above the surface of the ground and pivoted medially so as to oscillate horizontally, the cables being so connected to the

cross-bar as to be shifted thereby, and means connected with a moving car for oscillating the cross-bar limitedly, substantially as described.

5 3. In an automatic switch, a hinged and movable switch-rail, a thereto-affixed and downwardly-projecting post, a guide-plate secured rigidly thereto and bearing against a permanent plate to prevent the tilting of the
10 post, and means for shifting the post and the thereto-affixed rail, combined substantially as described.

15 4. The combination, with an arm secured to the under side of a car and held normally in position for its work, but so as to yield therefrom under greater strain, of a plate located on the surface of the street between the rails having a shoulder thereon to prevent more than the limited movement of an oscil-

lating cross-bar, the oscillating cross-bar piv- 20
oted on the plate alongside the shoulder, and devices, substantially as described, connecting the oscillating cross-bar with a shifting switch-rail, substantially as described.

5. In devices for shifting a switch, two arms 25
hinged at a distance apart on the under side of a car, springs to hold the arms normally but yieldingly in position, cables attached to the depending arms, and suitable devices for tilting an arm forwardly away from its springs 30
by means of its cable, all combined substantially as described.

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

SAMUEL T. MOCK.

Witnesses:

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