

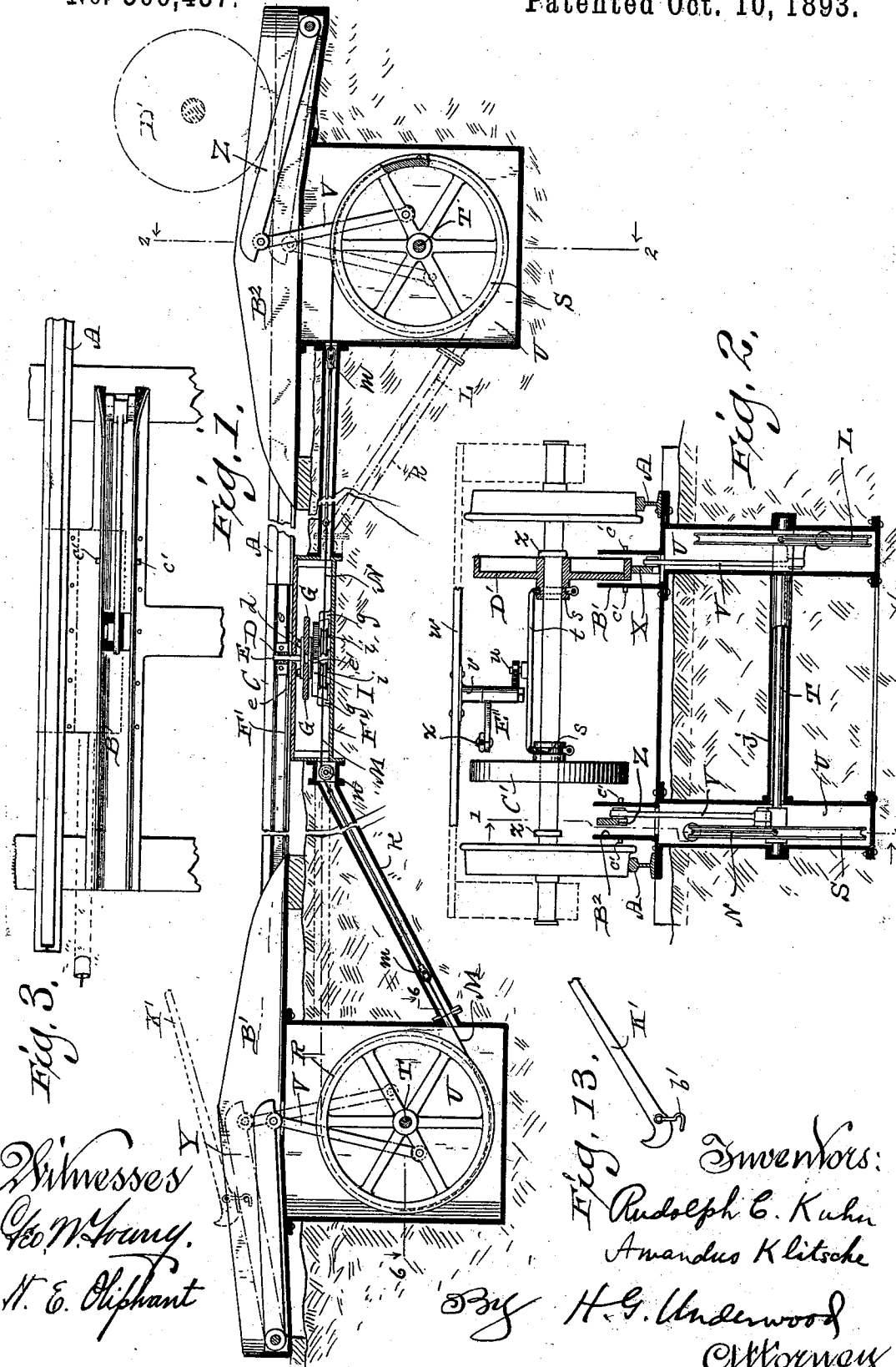
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5 Sheets—Sheet 1.

R. C. KUHN & A. KLITSCHKE.
RAILWAY SWITCH.

No. 506,437.

Patented Oct. 10, 1893.



Witnesses
Geo. W. Young.
H. E. Oliphant

Inventors:
Rudolph C. Kuhn
Amandus Klitsche
By H. G. Underwood
Attorney

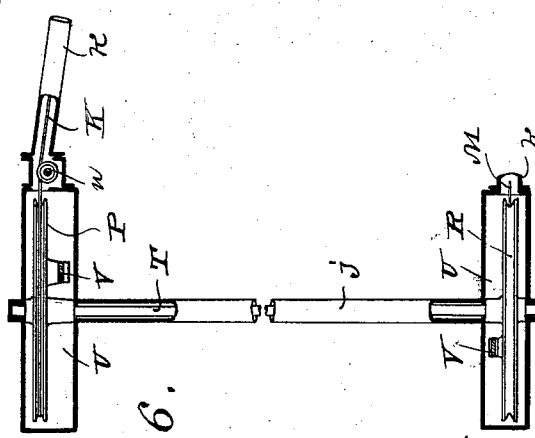
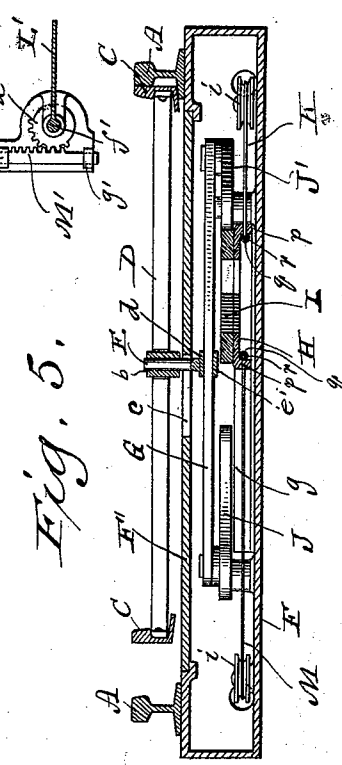
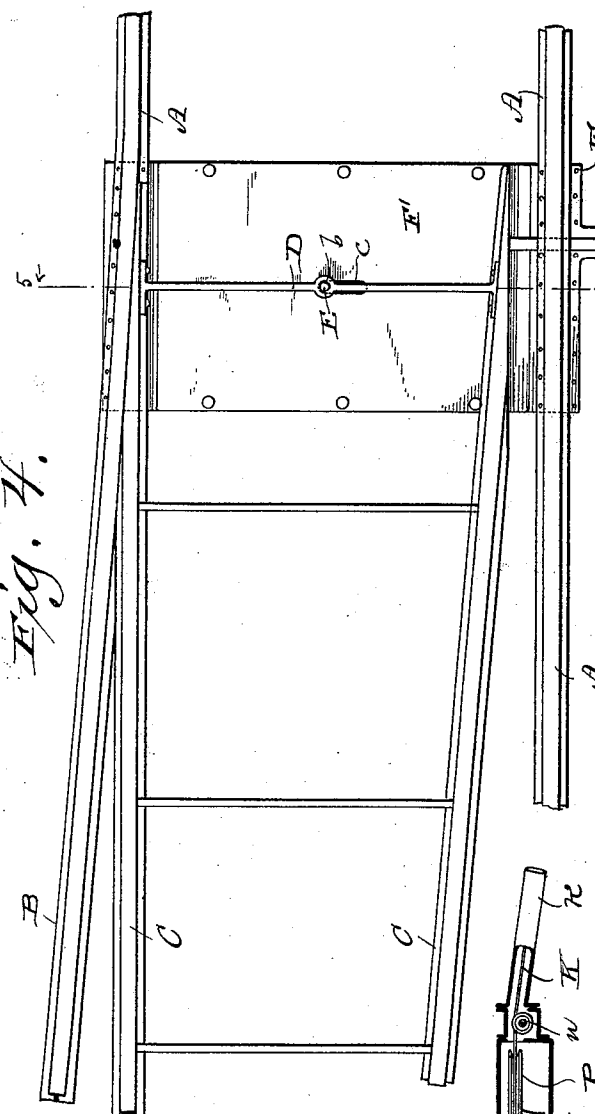
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5 Sheets—Sheet 2.

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Fig. 6.

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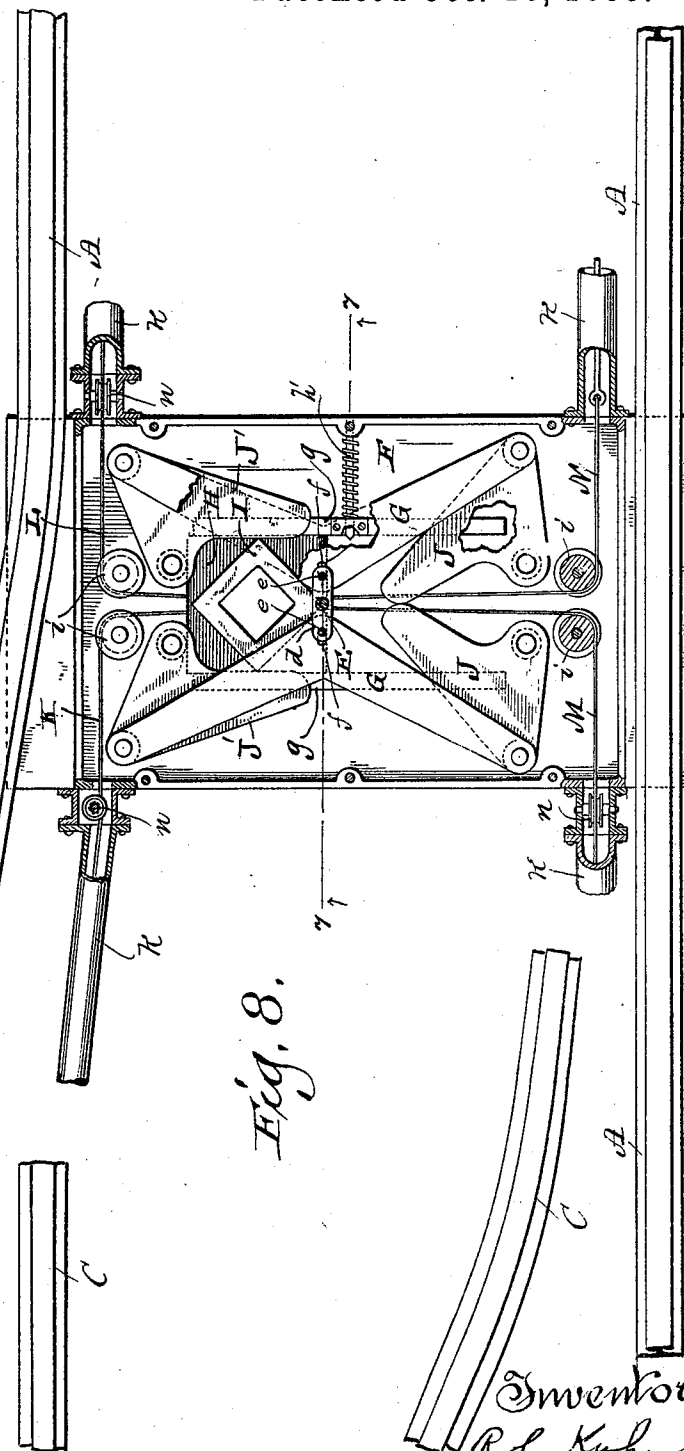
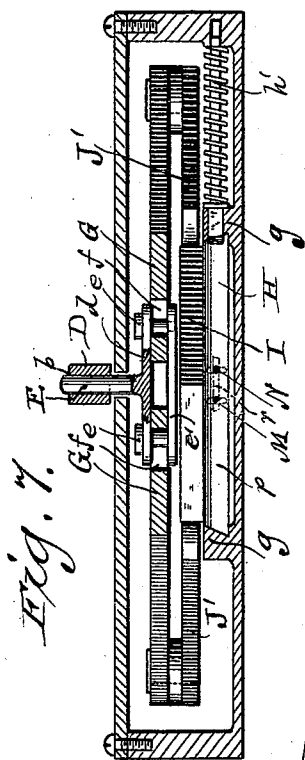
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Fig. 10.

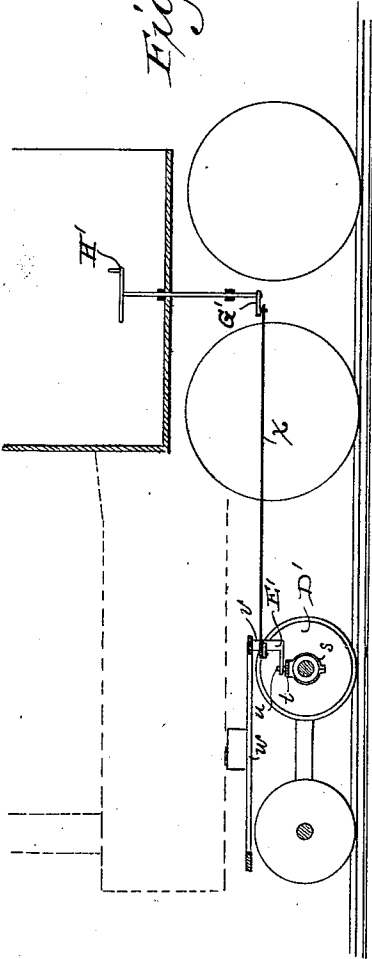


Fig. 9.

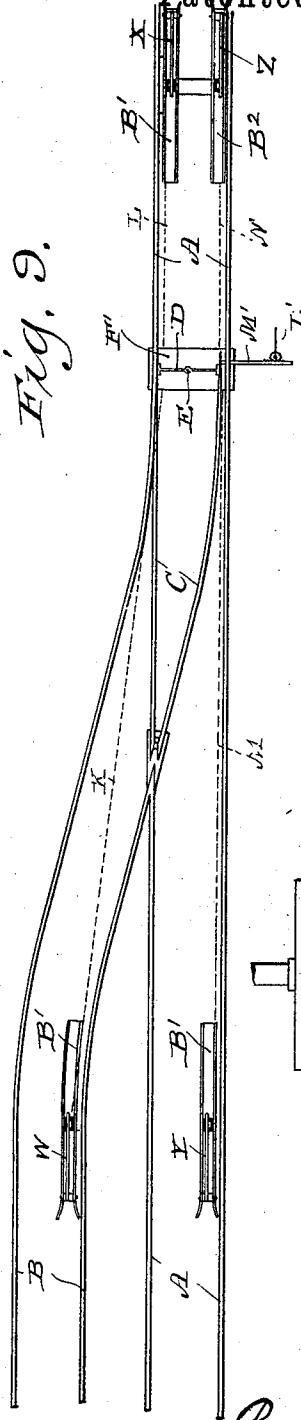
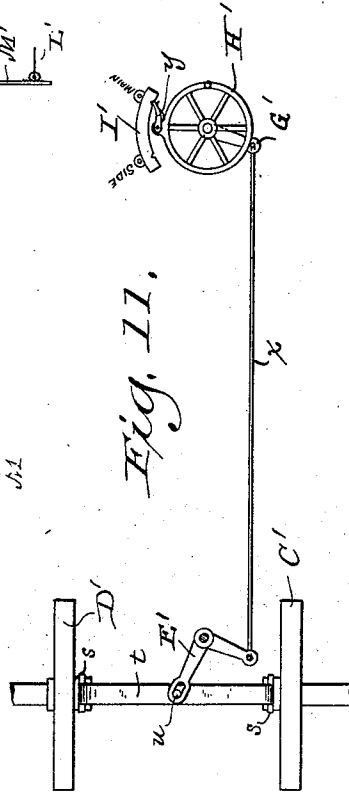


Fig. 11.



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(No Model.)

5 Sheets—Sheet 5.

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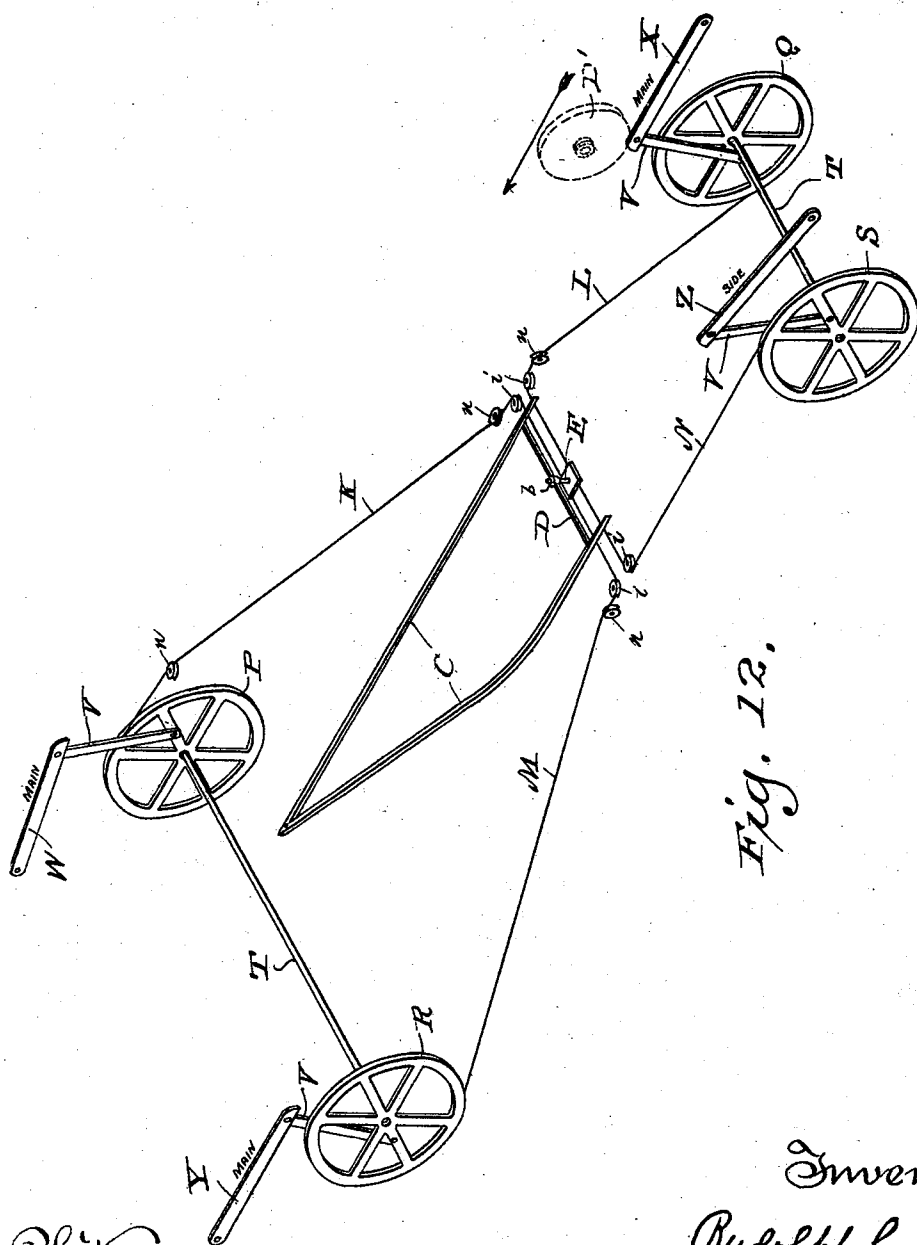


Fig. 12.

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UNITED STATES PATENT OFFICE.

RUDOLPH C. KUHN AND AMANDUS KLITSCHKE, OF LA CROSSE, WISCONSIN.

RAILWAY-SWITCH.

SPECIFICATION forming part of Letters Patent No. 506,437, dated October 10, 1893.

Application filed December 27, 1892. Serial No. 456,349. (No model.)

To all whom it may concern:

Be it known that we, RUDOLPH C. KUHN and AMANDUS KLITSCHKE, citizens of the United States, and residents of La Crosse, in the county of La Crosse, and in the State of Wisconsin, have invented certain new and useful Improvements in Railway-Switches; and we do hereby declare that the following is a full, clear, and exact description thereof.

Our invention has for its object to provide a railway-switch operated automatically from a locomotive to close or open for main track accordingly as the locomotive be running on said track or coming toward the same from a side track.

A further object of our invention is to operate the switch from the locomotive to permit of the latter running from main-track onto side-track.

These objects we attain by certain peculiarities of construction and combination of parts hereinafter described with reference to the accompanying drawings and subsequently claimed.

In the drawings Figure 1 represents a vertical longitudinal section taken on line 1—1 of the succeeding figure, and illustrates a switch-operating mechanism constructed according to our invention; Fig. 2, a vertical transverse section taken on line 2—2 of the preceding figure; Fig. 3, a detail plan view illustrating a switch-lever and adjacent guide for a device such as a wheel carried by a locomotive, and designed to actuate the lever; Fig. 4, a plan view of a switch and a casing that incloses certain of the parts embodied in our invention; Fig. 5, a section taken on line 5—5 of the preceding figure; Fig. 6, a like view taken on line 6—6 of Fig. 1; Fig. 7, a similar view taken on line 7—7 of the succeeding figure; Fig. 8, a plan view of the switch and the incased mechanism that forms part of our invention; Fig. 9, a plan view of a portion of a railway system illustrating our improved switch in connection therewith; Fig. 10, a diagram of a locomotive provided with a switch-operating mechanism constituting part of said invention; Fig. 11, a detail plan view of certain of the parts illustrated in the preceding figure; Fig. 12, another diagram illustrating the switch-mech-

anism, and Fig. 13, a side elevation of a lever that may be employed to throw the switch.

Referring by letter to the drawings, A represents the rails of a main-track, B those of a side-track and C the switch-rails at the junction of said tracks, these switch-rails being connected by the usual transverse bar D adjacent to their points. Intermediate of its extremities, the bar D is provided with an eye *b* engaged by a stem E that also engages a slot *c* in the removable top portion F' of a casing F, the latter being transverse to the main-track rails and below the same. The slot *c* in the top of the casing is parallel to the switch-bar D, and the stem E is provided with a base *d* that rests on angle-bars G, within said casing and this base is held in place by means of bolts *e* connecting with a link *e'* on the under side of the angle-bars and engaging slots *f* in the same. A slide plate H works between guides *g* on the bottom of the casing F, within the latter, and it is preferable to have a dovetailed engagement between said slide-plate and guides.

Rigid on the upper face of the slide-plate H is a suitable cam I (the one shown being of diamond contour) designed to operate levers J J, J' J' pivoted in pairs to the bottom of the casing F and likewise connected to the extremities of the angle-bars G above specified.

Connected to the ends of the slide-plate in any suitable manner are flexible devices K, L, M, N, that turn on pulleys *i* within the casing F and pass out of the latter at suitable angles to said plate to connect with grooved wheels P, Q, R, S, on which they are partially wound, these wheels being fast in pairs on shafts T and inclosed within casings U that are also connected in corresponding pairs by tubes *j* inclosing the shafts. The casings F and U are connected by suitably disposed tubes *k* coupled thereto and incasing the flexible devices above specified, it being preferable to have each flexible device consist of wire-cable extremities joined to an intermediate rod or series of such rods, either or both connections of the cables and rod being usually in the form of a turnbuckle *m* designed for the purpose of taking up any slack that may occur, and pulleys *n* are dis-

posed wherever it is necessary or desirable to ease or support the flexible devices. It is immaterial how the flexible devices are made fast to the slide-plate, but we show them as passed through flanges *p* on said plate and provided with eyes *q* engaged by stay-pins *r* in opposition to said flanges.

Each of the grooved wheels P, Q, R, S, has a link connection V with a lever pivoted in a guideway parallel to an adjacent track-rail, these levers being lettered W, X, Y, Z, and the guideways B' B² to facilitate the present description.

The locomotive shown in diagram, Fig. 10, is equipped with pressure-devices in the form of wheels C', D', loose on one of its axles and the hubs of these wheels turn in spanners *s* joined by a rod *t* to form a yoke that has a pivot-connection *u* with one arm of a bell-crank E' loose on a stud *v* depending from an adjacent truck-frame *w*, and the other arm of the bell-crank has a chain or rod-connection *x* with a crank-rod G' extended up into the locomotive-cab and provided with an actuating device preferably in the form of a hand-wheel H' provided with a spring-controlled detent *y* for engagement with notches in a stationary bracket I', the latter being illustrated in Fig. 11.

By means of stops *z* on the locomotive axle, above specified, the pressure devices C' D' adjustable thereon by the yoke and crank-mechanism, hereinbefore set forth, are limited as to travel in either direction, and said pressure-devices are normally adjusted so as to have the one D' run through a guideway B' in any direction the locomotive may travel, whether on the main or side track in its approach toward the switch, the disposition of said guideways being such that the other pressure device C' will not run through any of them, except the one B², and then only at such times as said crank-and-lever mechanism may be operated with this end in view, in which event the former pressure-device D' clears the guideway B' that would otherwise be in its path. In case either of the pressure-devices runs through a relative guideway it will actuate the lever pivoted therein, if this lever be elevated, as will be the case with the levers X, Y, if the switch be open, and likewise the case with the levers W, Z, if the switch be closed. Now if the locomotive be running on main track, in either direction, and it is desirable to continue on said track, the pressure devices C, D', are set in their normal position and locked against displacement, incidental to jar, by the engagement of the detent and bracket above specified, whereby the latter of these pressure devices will run through any of the guideways B' in its path and depress such of the levers X, Y, as may be elevated incidental to an open switch. This depressing of a lever X or Y exerts power on the relative grooved wheel linked thereto and actuates the flexible device L or M to move the slide-plate H on its guides and

thereby exert the power of the cam I on the levers J or J' that may be in its path, whereby these levers are swung on the pivots connecting with the casing F to thereby operate the angle-bars G in the proper direction to cause a movement of the stem E that is joined to said angle-bars and switch-bar D, whereby the latter is thrown in the proper direction to close the switch for main-track. If the switch be closed, the side-track lever W will be elevated and the pressure-device D' on a locomotive approaching toward the main-track will depress this lever thereby causing the relative grooved wheel P to actuate the flexible device K and open said switch through the medium of the sliding cam, and the lever-mechanism in connection with the switch-bar, as above specified

If the locomotive be running on main-track toward the switch, and it is desirable to run onto side-track, the crank-and-lever mechanism above described is operated, by means of the hand wheel H' in the cab of said locomotive, whereby the pressure device C' is adjusted so as to run through the guideway B² and depress the previously elevated lever Z thereby operating the grooved wheel S to actuate the flexible device N and thus move the slide-plate H in the proper direction to cause its cam I to operate the lever-mechanism in the casing F and open said switch. The locomotive having run onto the side-track the pressure-devices are restored to their normal positions by the proper mechanism under control within the cab of said locomotive.

From the foregoing it will be seen that the flexible devices are so disposed that the ones K L will unwind from the grooved wheels P, Q, when the ones M, N, are winding on the other grooved wheels R, S, and consequently there is no slack in any of said flexible devices at any time.

To operate the switch in either direction independent of the locomotive, we provide a lever K' having pivotal hooks *b'* for detachable engagement with lugs *c'* extended laterally from the guideways B' B² this lever being shown in detail in Fig. 13, and its operation illustrated by dotted lines in Fig. 1.

As a means for showing the position of the switch at any time, we provide an ordinary target L' having a pinion *d'* fast on its rod *f'*, this pinion being engaged with a rack-bar M' connected to said switch and working loosely in guides *g'* as best illustrated in Fig. 4.

It is possible that, owing to jar, the sliding plate H may play back and forth in its guides and as a means to prevent said plate moving far enough to cause the cam thereon to actuate such of the levers J or J' that may be in its path and thereby throw the switch, we may employ the spring-controlled stop *h'* illustrated in Figs. 7 and 8.

While we have shown the levers W, X, Y, Z, disposed along the track-system on the inside of the rails, they may be outside the

same, and in such a case the actuating devices C', D' on the locomotive will be correspondingly disposed. It is also to be observed that the cam I after entering between a pair of the levers J, J' will, on its movement, keep these levers in parallel position, thereby locking the switch in the position to which it may be thrown, this dead motion being increased to any desirable degree.

Having now fully described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. A railway-switch having its throw-bar joined to a lever-mechanism, an actuating device for this lever-mechanism, levers disposed at certain points along a track-system more or less distant from the switch, power-transmitting mechanism under control of the levers, suitable devices connecting these power-transmitting mechanisms with said actuating device; and permanent fulcrums for a portable hand-lever designed to operate any one of those aforesaid, substantially as set forth.

2. A casing having its bottom provided with guides, a sliding-plate movable on the guides, a cam on the sliding-plate, a lever-mechanism pivotally connected to said bottom of the casing and actuated by the cam, and a stem connected to the lever-mechanism, in combination with a railway-switch having its throw-bar connected to the stem, other casings joined in pairs by a tube, an axle within each tube and a grooved wheel fast to each end of the axle within one of the latter casings, other tubes connecting these casings with the one aforesaid flexible devices run through the latter tubes to connect with the wheels and said sliding-plate, and actuating levers linked to said wheels, these levers being arranged along a track-system to come in the paths of pressure devices on a locomotive, substantially as set forth.

3. A casing having its bottom provided with guides, a sliding-plate movable on the guides, a cam on the sliding plate, a lever-mechanism pivotally connected to said bottom of the casing and actuated by the cam, a spring-controlled stop in the path of said sliding-plate, and a stem connected to the lever-mechanism, in combination with a railway-switch having its throw-bar connected to the stem, actuating levers disposed along a track-system at certain points more or less distant from the switch in opposite directions, to come in the paths of pressure devices on a locomotive, incased power-transmitting mechanisms under control of the levers, and inclosed flexible devices connecting these power-transmitting mechanisms with the aforesaid sliding-plate, substantially as set forth.

4. A casing containing a lever-mechanism and actuating device for the same, a railway-switch having its throw-bar connected to the lever-mechanism, levers disposed along a track-system parallel thereto at certain points more or less distant from the switch in opposite directions, incased power-transmitting mechanisms under control of the levers, and inclosed flexible devices connecting these power-transmitting mechanisms with the aforesaid actuating device; in combination with pressure-devices on a locomotive for predetermined contact with any of said levers, substantially as set forth.

In testimony that we claim the foregoing we have hereunto set our hands, at La Crosse, in the county of La Crosse and State of Wisconsin, in the presence of two witnesses.

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AMANDUS KLITSCHKE.

Witnesses:

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JNO. STREHL.