J. A. BRADLEY.

SWITCH CONTROLLING MECHANISM.

APPLICATION FILED MAR. 24, 1913.

1,066,989.

Patented July 8, 1913.

2 SHEETS—SHEET 1.

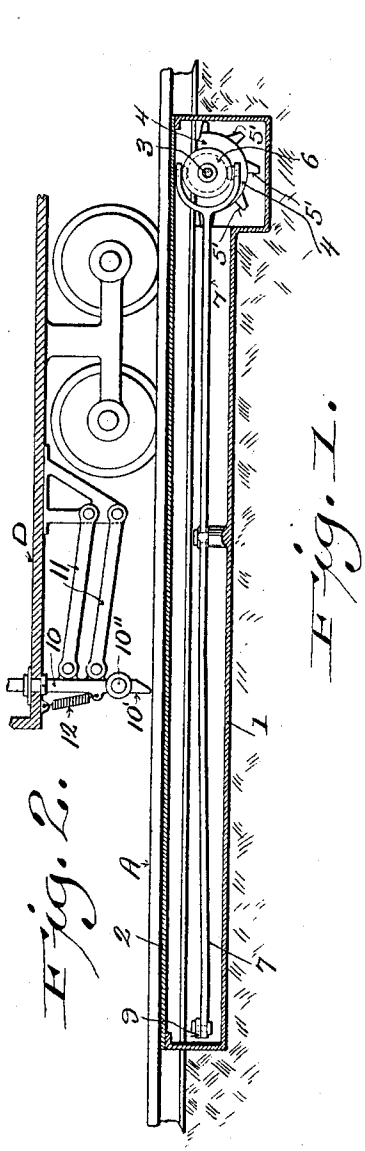


Fig. 2.

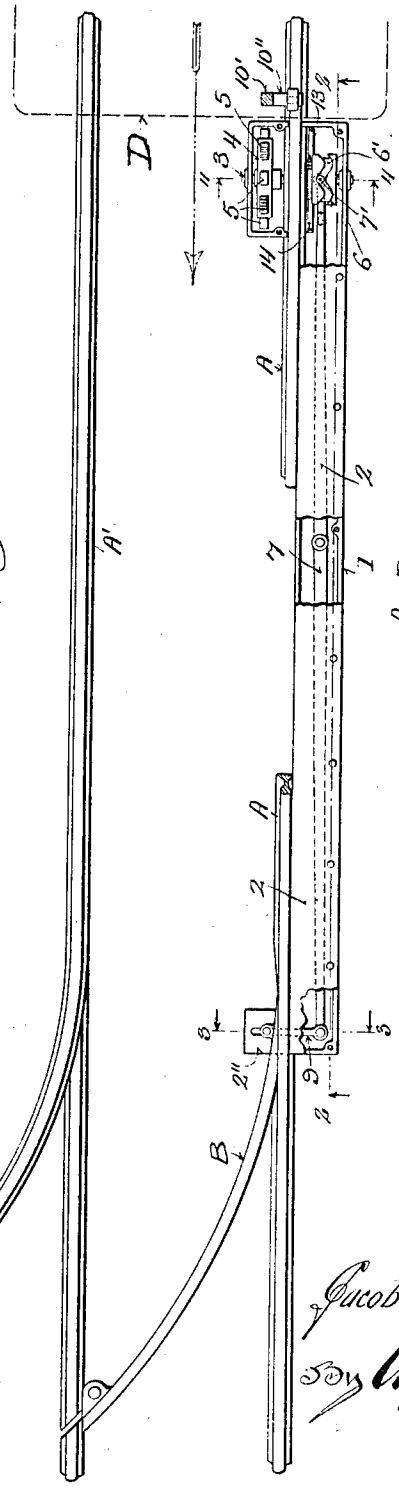


Fig. 1.

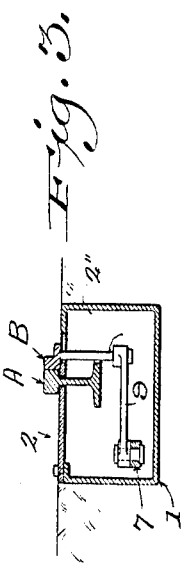


Fig. 3.

Witnesses:
Casimir Young
May Downey.

Inventor
Jacob A. Bradley
By Chapman & Young
Attorneys.

COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

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2 SHEETS—SHEET 2.

Fig. 3.

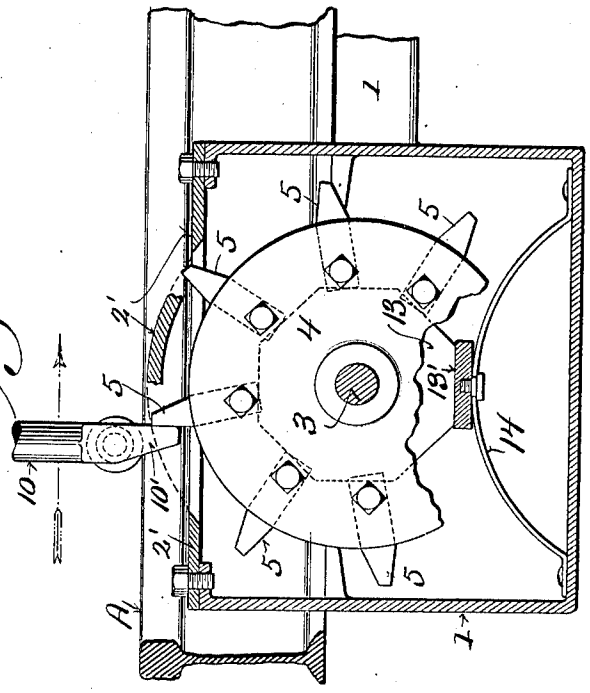
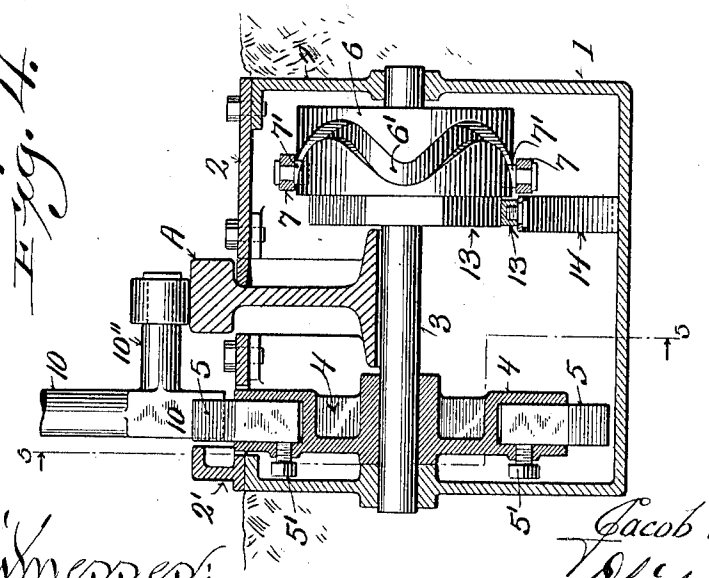


Fig. 4.



Witnesses:

Casimir Gzesz

May Downey.

Inventor:

Jacob A. Bradley

By Upshur & Young

Attorneys.

COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

JACOB A. BRADLEY, OF WABENO, WISCONSIN.

SWITCH-CONTROLLING MECHANISM.

1,066,989. Specification of Letters Patent. Patented July 8, 1913.

Application filed March 24, 1913. Serial No. 756,497.

To all whom it may concern:

Be it known that I, JACOB A. BRADLEY, a citizen of the United States, and resident of Wabeno, in the county of Forest and State of Wisconsin, have invented certain new and useful Improvements in Switch-Controlling Mechanism; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention has for its object to provide a simple, economical and effective machine for controlling a railway switch from a car or the cab of a locomotive in motion.

The construction and arrangement is such that by a manual operation a tappet carried by the car is shifted into and out of engaging position with a star-wheel, whereby motion is imparted to the latter, which motion is transmitted to a cam-controlled switch-lever in alternate impulses to throw said switch from open to closed position or vice versa, the power for actuating the star-wheel being imparted thereto by travel of the car or other vehicle to which the tappet is applied.

With the above objects in view the invention consists in certain peculiarities of construction and combination of parts as hereinafter set forth with reference to the accompanying drawings and subsequently claimed.

In the drawings Figure 1 represents a plan view of a railway system provided with switch-actuating mechanism embodying the features of my invention, certain of the parts being broken away and other parts in section to more clearly illustrate details of construction; Fig. 2, a sectional elevation of the same, the section being indicated by line 2—2 of Fig. 1; Fig. 3, an enlarged detailed cross-section, the section being taken through the end of the switch member as indicated by line 3—3 of Fig. 1; Fig. 4, an enlarged detailed cross-section through the star-wheel mechanism and adjacent parts, the section being indicated by line 4—4 of Fig. 1, and Fig. 5, a face view of the star-wheel with parts in section as indicated by line 5—5 of Fig. 4, other parts being broken away to more clearly show details of construction.

Referring by characters to the drawings A and A′ represent rails of a main track provided with a pivoted switch member B whereby the rolling stock is shifted from the main to a siding track C in the ordinary manner, it being understood that the car D to be shifted, is traveling in a direction indicated by the arrow in Fig. 1. Extending forwardly from the point of the switch B and parallel to the rail A is a box 1, which box is depressed in the road-bed, being provided with a detachable cover-plate 2. The cover-plate is flush with the plane of the road-bed and has one edge in abutting engagement with the side face of the adjacent rail as shown, by which arrangement said cover-plate can readily be removed for access to switch mechanism incased within the box. Both ends of the box extend under the rail A, the side-walls of the approach extension being provided with bearings for a transversely disposed spindle 3, which spindle carries a rotor in the form of a star-wheel 4 having spur-teeth 5, one of the same at all times being arranged to project through a slot in a cover-section 2′ and above the road-bed surface, adjacent to the side face of the rail tread.

In order to protect the exposed tooth of the spur-wheel the cover-section 2′ is preferably crowned, as shown, whereby inadvertent engagement of the exposed tooth is avoided, due to possible engagement of a vehicle or the like with said tooth. The teeth 5 are preferably radially adjustable in sockets formed in the body of the spur-wheel, whereby they may be raised incidental to wear, in order that the projecting tooth may properly perform its function, the said teeth being held in adjusted position by set-screws 5′ as shown.

Mounted upon the spindle 3, outside of the rail-tread is a fluted cam-wheel 6, the annular track of which, as shown, is preferably in the form of a groove 6′ having high and low points opposite an imaginary central line, which points are equal to the number of teeth in the spur-wheel, the minimum number being four or, as shown, a multiple thereof. The fluted cam-wheel is provided for actuating a switch-lever 7 having a spanner-end that carries anti-friction rollers 7′, which rollers engage the cam-grooves, the lever being incased within the box and is fulcrumed upon a post that extends from its bottom. The opposite or rear end of the lever is connected to the point of the switch member B by a link 9 that engages a pin which projects from the switch-point

through a slot in the upper face of a permanent cover-section 2'' with which the rear end extension of the box is provided.

In order to impart motion to the star-wheel 4 a plunger rod 10 is provided, one of which plunger-rods is conveniently located at either end of a car or at any desired point of a locomotive or caboose constituting part of the equipment of a railway train.

In the accompanying illustration the plunger apparatus is shown in connection with a surface car-line, but it should also be understood that the device is equally applicable to elevated roads. The plunger-rod, in this exemplification of my invention, extends through the vestibule flooring of the car C and is connected to a thrust-post by a pair of links 11. The lower end of the rod carries a tappet-finger 10' that is vertically alined with the teeth of the star-wheel and a laterally extended shoe 10'', which shoe carries an anti-friction roller adapted to engage the tread of the adjacent rail A when the plunger is depressed by a manual operation, effected either by an arm or foot movement. The plunger-rod shoe is normally held out of engagement with the rail tread by a coiled spring 12 that connects the plunger-rod to a convenient point of the car-body, it being understood that such structural features form no part of my invention except so far as they are generally combined to produce the desired result.

When motion is imparted to the spur-wheel impact of the applied power is liable to cause slight overthrow of said spur-wheel, whereby the succeeding tooth may be positioned in advance of its predetermined set position and to avoid such overthrow the spindle 3 is provided with a polygonal faced locking shoe 13, one face of which is engaged by a rub-plate 13', which rub-plate is forced against said face by a leaf-spring 14 that is suitably seated at its ends upon the bottom of the box. Hence should the spur-wheel be moved within approximately its desired throw for accomplishing the result this locking-plate and shoe will serve to center and hold the wheel in its proper position.

With the car in the position and traveling in the direction as shown in Fig. 1 of the drawings, it is apparent that the operator, in order to open the switch which is now closed, to the main line, merely depresses the plunger-rod, whereby its shoe portion 10'' will engage the rail-tread, thus limiting downward movement of the tappet finger 10' to an engaging position with relation to the exposed tooth 5 of the spur-wheel. Further travel of the car toward the switch point will cause the spur-wheel to be partially rotated a distance equal to the distance between two of its teeth, whereby the fluted cam-wheel will impart motion to the switch-lever in one direction, the swing causing said switch member B to open and thus clear the main track. It follows that the switch is left open after the car has traveled thereover and should it be desired to sidetrack the succeeding car of the main line the operator depresses the tappet, whereby the switch-actuating mechanism is put into motion to close the switch, due to the alternate arrangement of the fluted cam-wheel surface.

It is evident from the foregoing that when a car is traveling in a reverse direction from that indicated by the arrow in Fig. 1, the switch, if closed, can be sprung open by the wheel flange, there being sufficient elasticity in the switch mechanism to permit this movement. It is also obvious that I may employ either visible or audible signals in connection with the switch, whereby its position is made apparent to the operator such devices being more particularly employed in connection with steam railways.

Furthermore it should be understood that while I have shown and described the casing of the switch members as being outside of one of the track-rails, the same may be placed between said rails in some instances without departing from the spirit of my invention, or in instances where the device is used in connection with elevated tracks such incasement of the mechanism may be dispensed with.

The advantages of a switch mechanism embodying the features of my invention are obvious, due to the fact that the rolling stock need not be brought to a standstill to throw the switch, the same being quickly effected by the motorman or engineer without changing his working position.

I claim:

1. In a railway system embodying a main track, a side track, a switch connection between said tracks, and a car; the combination of a spindle disposed transversely of one of the main track-rails, a spur-wheel mounted thereon having teeth, one of which is arranged to normally project above the rail base in juxtaposition to its tread, a fluted cam-wheel carried by said spindle, a lever having a spanner in engagement with the fluted track of said cam-wheel, means connecting the opposite end of the lever and switch, and a depressible tappet mounted upon the car adapted to aline with the exposed tooth of said spur-wheel.

2. In a railway system embodying a main track, a side track, a switch connection between said tracks, and a car; the combination of a spindle disposed transversely of one of the main track-rails, a spur-wheel mounted thereon having teeth, one of which is arranged to normally project above the

rail base in juxtaposition to its tread, a fluted cam-wheel carried by said spindle, a lever having a spanner in engagement with the fluted track of said cam-wheel, means connecting the opposite end of the lever and switch, a depressible tappet mounted upon the car adapted to aline with the exposed tooth of said spur-wheel, and a shoe carried by the tappet engageable with the rail tread whereby said tappet is horizontally positioned for engagement with the exposed spur-wheel tooth.

In testimony that I claim the foregoing I have hereunto set my hand at Wabeno, in the county of Forest and State of Wisconsin, in the presence of two witnesses.

JACOB A. BRADLEY.

Witnesses:
O. S. TENLEY,
M. O. BOEHM.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."