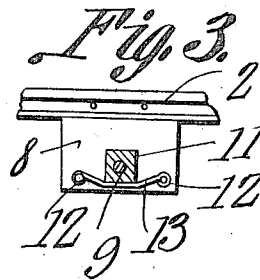
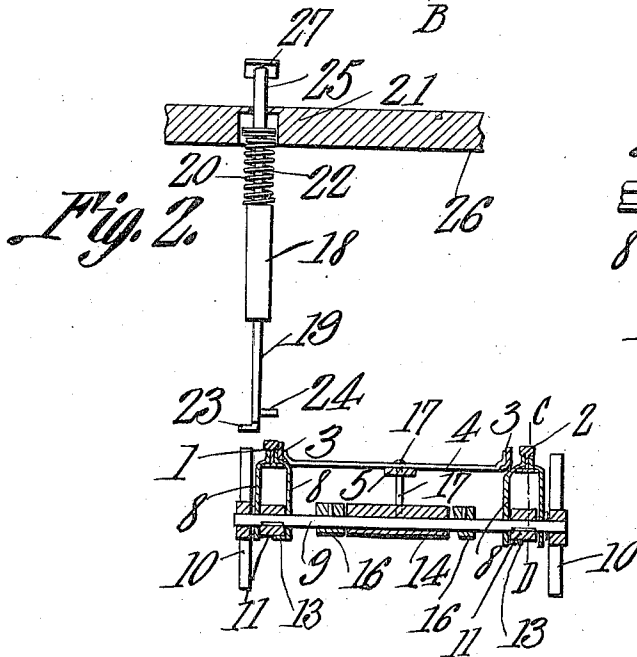
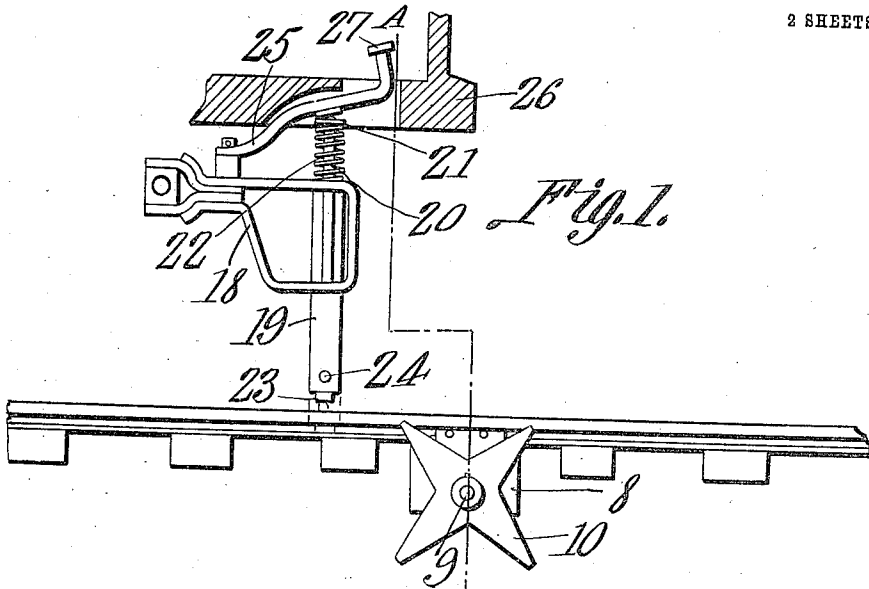


J. A. WALKER.
 SWITCH OPERATING MECHANISM.
 APPLICATION FILED APR. 14, 1910.

987,778.

Patented Mar. 28, 1911.
 2 SHEETS-SHEET 1.



Witnesses

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UNITED STATES PATENT OFFICE.

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SWITCH-OPERATING MECHANISM.

987,778.

Specification of Letters Patent. Patented Mar. 28, 1911.

Application filed April 14, 1910. Serial No. 555,324.

To all whom it may concern:

Be it known that I, JAMES A. WALKER, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented a new and useful Switch-Operating Mechanism, of which the following is a specification.

This invention relates to railway switches and more particularly to means whereby a switch can be thrown by mechanism under control of the car man upon a car approaching the switch.

One of the objects of the invention is to provide mechanism adapted to be connected to and supported by the rails at points adjacent the switch tongues, said mechanism including a revoluble shaft carrying elements for positively shifting the tongues in either direction.

Another object is to provide yielding means for positively holding the tongues in either open or closed positions, said means being housed beneath the rails and supported by them.

Another object is to provide improved means carried by a car for actuating the switch mechanism, said means including a guide device adapted to contact with and travel upon the adjoining rail so as to be directed into engagement with the mechanism located below and at the side of the tracks.

With these and other objects in view the invention consists of certain novel details of construction and combinations of parts hereinafter more fully described and pointed out in the claims.

In the accompanying drawings the preferred form of the invention has been shown.

In said drawings:—Figure 1 is a side elevation of the complete mechanism, a portion of the car structure being shown in section. Fig. 2 is a section on line A—B Fig. 1. Fig. 3 is a section on line C—D Fig. 2. Fig. 4 is a top plan view of the switch and the mechanism combined therewith. Fig. 5 is a bottom plan view of the switch and the adjoining mechanism.

Referring to the figures by characters of reference 1 and 2 designate the fixed or stationary rails located at the switch and between which are arranged the movable points or tongues 3. These tongues are connected, as ordinarily, by means of a cross bar 4 so as to insure the simultaneous movement of the two tongues. A lever 5 is pivotally connected to the bar 4 and is fulcrumed as at 6

upon a cross bar 7 which is secured in any suitable manner to the rails 1 and 2. This lever may be connected in any suitable manner to a signal located at any desired point relative to the switch so that, when the lever is swung about its fulcrum, the signal will be operated to indicate the position of the switch tongues.

Supporting plates 8 are bolted or otherwise secured to opposite faces of the web of each rail 1 and 2, these plates bearing on the base flanges of the rails and extending downwardly therefrom. The two pairs of plates are located directly opposite each other and adjacent the points of the tongues 3, these plates serving to support a shaft 9 which is journaled within them and extends beyond the outer sides of the two rails 1 and 2. A star wheel 10, preferably provided with four radial arms is secured to each end of the shaft 9 and the arms are of such length as to move a short distance above the tread of the rail when the wheel is rotated. A rectangular block 11 is secured to the shaft 9 between the plates 8 of each pair and the blocks are so located with relation to the star wheels 10 that, when the upper and lower faces of the blocks are horizontal, the arms of the star wheels are all disposed at the same angle to a vertical line extending through the center of each wheel. Cross pins 12 connect the lower portions of the plates 8 of each pair and the ends of a spring 13 are mounted on these pins and the said spring is adapted to bear yieldingly against the adjoining block 11 so as to always hold one face of the block in a horizontal plane. A sleeve 14 is slidably mounted on the shaft 9 at a point between the rails 1 and 2. This sleeve has cam shaped ends such as have been indicated at 15 and said ends cooperate with cam faces formed upon collars 16 secured to and rotating with the shaft 9. The various cam faces are so located that during each one-half rotation of the shaft 9, the cams 16 will successively slide the sleeve 14 to the left and to the right. In other words the sleeve 14 is moved four times during each complete rotation of the shaft 9. The pivot pin 17 which connects the bar 4 with the lever 5, extends downwardly and is secured to the center portion of the sleeve 14. It will be apparent, therefore, that the bar 4 and the tongues 3 will be moved with the sleeve 14.

The mechanism employed for actuating the star wheels, and which is adapted to be

mounted upon a car, consists of a guide frame or bracket 18 which may be connected to the car structure in any suitable manner and has a bar 19 slidably mounted within it, there being a stem 20 projecting upwardly from the bar and provided with a head 21. A spring 22 is coiled about the stem and bears at its ends against the head 21 and the bracket 18 and serves to hold the bar 19 normally elevated above the track. An actuating finger 23 extends outwardly from the lower end of the bar 19 and is adapted, when said bar is lowered, to move against one of the arms of the star wheel in the path thereof. The downward movement of the bar 19 is limited by a stop lug or projection 24 projecting inwardly therefrom and adapted to come into contact with the tread of the rail.

An actuating lever 25 is pivotally connected to the bracket 18 and bears upon the head 21, the free end of the lever extending upwardly above the floor of the car structure 26 and having a foot plate 27 thereon.

Should the signal which is connected to the switch, show that said switch is set in the wrong position, the car man upon the approaching car, depresses the foot plate 27 and thus forces the bar 19 downwardly until the stop 24 comes into contact with the tread of the rail thereunder. As the car advances toward the switch the finger 23 moves against one of the arms of the wheel 10 in the path thereof and gives said wheel a one-quarter turn. The cams 16 which rotate with the shaft 9 thus shift the sleeve 14 longitudinally so as to cause the tongues 3 to change their positions. During this one-quarter turn of the star wheel and its shaft, the blocks 11 are also given a one-quarter turn and the springs 13 yield during the movement of the corner portions of the blocks thereover and operate to complete the one-quarter turn of the shaft and to bring the tongues to their proper positions relative to the rails 1 and 2.

It is to be understood that other means than those shown may be employed for depressing the bar 19. For example, should the operating mechanism be mounted upon a locomotive, the bar 19 may be attached to a bell crank lever and this in turn actuated by a rod extending to a lever located within the cab of the locomotive. Various other

means may be employed for operating the bar, all of which are so obvious that it is not necessary to describe or illustrate them in detail.

Various changes can of course be made in the construction and arrangement of the parts without departing from the spirit or sacrificing any of the advantages of the invention as defined in the appended claims.

What is claimed is:—

1. The combination with switch tongues, and a connecting bar pivotally secured thereto, of a shaft mounted for rotation below the bar, means operated by cars passing over the switch for intermittently rotating the shaft, a non-rotatable sleeve slidably mounted on the shaft, a direct connection between said sleeve and the bar, and means revoluble with the shaft and bearing against the ends of the sleeve, for shifting said sleeve longitudinally in opposite directions successively.

2. The combination with switch tongues, and a connecting bar pivotally attached thereto, of a shaft mounted for rotation under the bar, means operated by cars passing over the switch for intermittently rotating the shaft, a non-rotatable sleeve slidably mounted on the shaft, a projection thereon engaging the bar, and opposed cam members secured to and revoluble with the shaft, said members bearing against the ends of the sleeve to shift said sleeve in opposite directions successively during the rotation of the shaft.

3. The combination with a switch tongue, and a connecting bar pivotally connected thereto, of a shaft mounted for rotation below the bar, a car wheel revoluble with the shaft, a sleeve slidably mounted on the shaft, a projection on the sleeve and engaging the bar, said projection and bar constituting means for holding the sleeve against rotation, and cams secured to the shafts at the ends of the sleeve, said cams co-operating to successively shift the sleeve in opposite directions during the rotation of the shaft.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

JAMES A. WALKER.

Witnesses:

E. W. FORGY,
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