

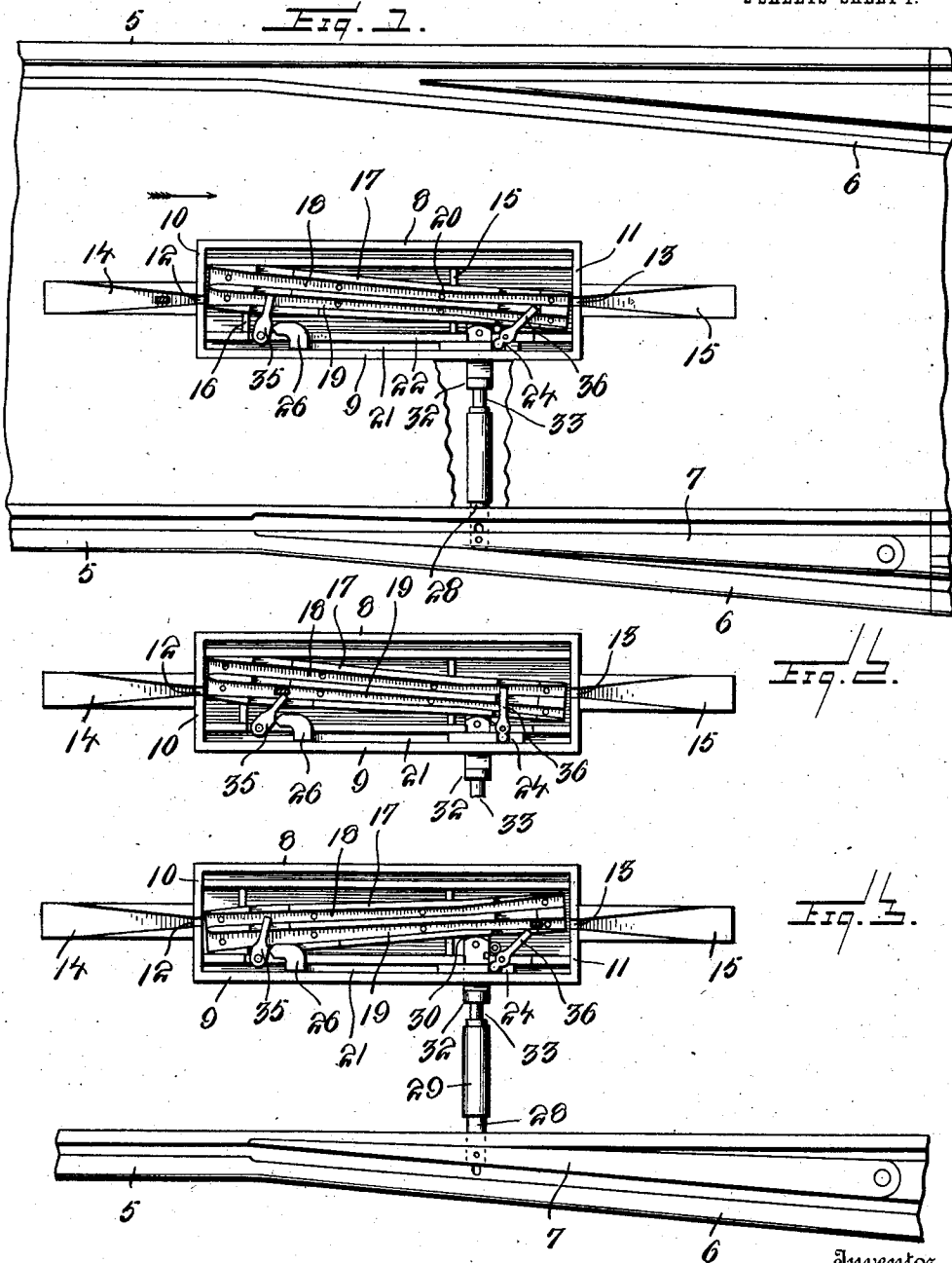
M. L. SHEPHERD.
SWITCH OPERATING MECHANISM.

APPLICATION FILED APR. 8, 1910. RENEWED MAY 3, 1911.

1,011,501.

Patented Dec. 12, 1911.

2 SHEETS—SHEET 1.



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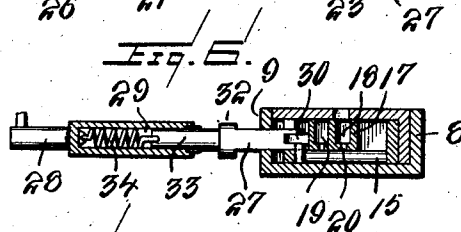
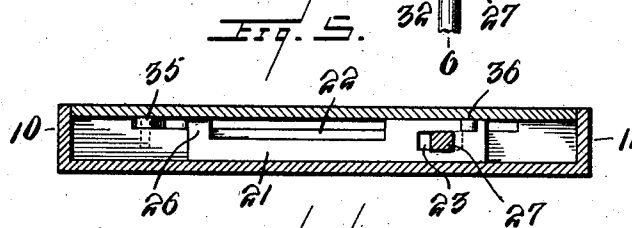
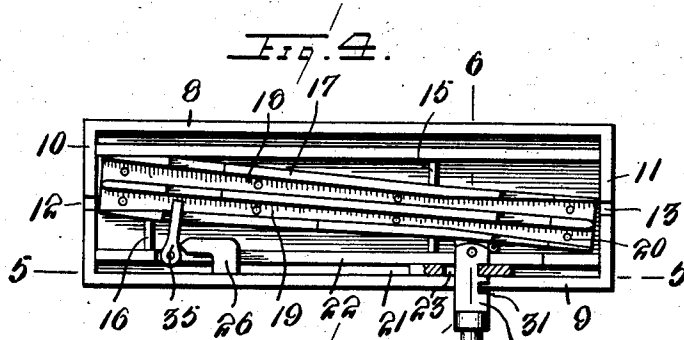


Fig. 7.

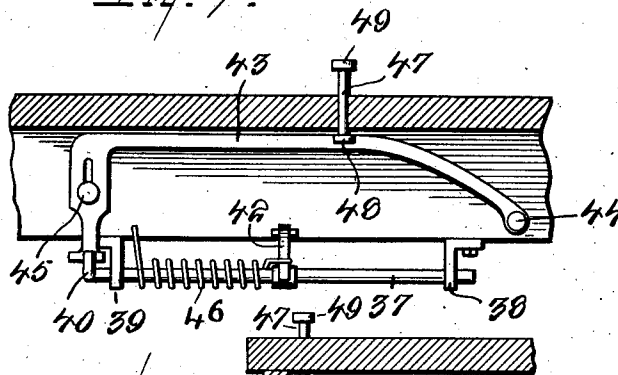
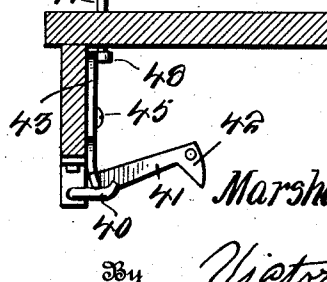


Fig. 8.



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UNITED STATES PATENT OFFICE.

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SWITCH-OPERATING MECHANISM.

1,011,501.

Specification of Letters Patent.

Patented Dec. 12, 1911.

Application filed April 8, 1910, Serial No. 554,266. Renewed May 3, 1911. Serial No. 624,851.

To all whom it may concern:

Be it known that I, MARSHALL L. SHEPHERD, a citizen of the United States, residing at Montgomery, in the county of Montgomery and State of Alabama, have invented new and useful Improvements in Switch-Operating Mechanism, of which the following is a specification.

This invention relates to improvements in railway switch mechanism and more particularly to the type shown in my pending application filed by me under date of Feb. 17, 1910, Serial No. 544,409. In that application a structure is shown comprising a pivoted switch point and a bodily movable element operated by a member depending from a car to throw the switch point in order that the car may continue on the main line or pass through a siding without the necessity of the operator leaving the car or the car coming to a standstill before the switch is operated. I have found in practice that better results are obtained when the switch point is locked after the completion of its movement in order to prevent the mechanism from being accidentally moved by the wheels of vehicles or the like.

One object of the present invention is to provide a lock operable by a member depending from a car to unlock the switch in advance of the movement of the shifting member and then to automatically lock the switch after the movement of the shifting member is completed.

Another object is the provision of a yielding connection between the shifting member and the switch point which will enable the shifting member to move under the pressure of the member depending from the car even though the switch point may be jammed by an object falling between the said switch point and the stationary rail, this structure also permitting, when the shifting member is locked, movement of the switch point by the flange of a car wheel passing from a siding onto the main line.

With these and other objects in view, which will more fully hereinafter appear, the present invention consists in certain novel details of construction and arrangement of parts hereinafter fully described, illustrated in the accompanying drawings, and more particularly pointed out in the appended claims; it being understood that various changes in the form, proportion,

size, and minor details of the device may be made, within the scope of the appended claims, without departing from the spirit or sacrificing any of the advantages of the invention.

In the accompanying drawings, forming a part of the specification;—Figure 1 is a plan view of the device with the top plates removed and showing the mechanism in locked position and the depending member from a car about to engage with the shifting member. Fig. 2 is a similar view showing the parts unlocked by the member depending from the car after the said member is moved into engagement with the shifting member. Fig. 3 is a similar view showing the parts in locked position after the member depending from the car has moved the shifting member and also actuated the locking mechanism. Fig. 4 is a similar view showing the locking member partly in section and in engagement with the connection between the switch point and shifting member. Fig. 5 is a sectional elevation taken on the line 5—5 of Fig. 4. Fig. 6 is a sectional end elevation taken on the line 6—6 of Fig. 4. Fig. 7 is an elevation of the member carried by the car to actuate the shifting member, also showing the actuating means for the said member. Fig. 8 is a side elevation of the member carried by the car also showing in end elevation the actuated means for the same.

Similar numerals of reference are employed to designate corresponding parts throughout.

The main rails are designated by the numeral 1, the switch rails by the numeral 2 and the pivoted switch point for directing a car onto the main or side rails by the numeral 3.

Positioned between the stationary rails is a rectangular-shaped frame, similar to the frame shown in my pending application, before referred to, the frame being oblong and the opposite sides of which are designated by the numerals 4 and 5 and the opposite ends by the numerals 6 and 7, being medially provided on their upper surfaces with transverse slots 8 and 9. Extending beyond the opposite ends 6 and 7 and in alinement with the slots 8 and 9 are channeled guides 10 and 11, the floors of the same being inclined upwardly from the ends 6 and 7, the said guides receiving a de-

pending member to be described later when the said member is entering and leaving the frame.

Extending transverse the frame and disposed adjacent to the opposite ends thereof are transverse bars 15 and 16 which form bearings for the shifting member designated by the numeral 17. The shifting member 17 is identical to the member shown in my pending application having on its upper face grooves 18 and 19, which diverge at the opposite ends of the member. The floors of the grooves 18 and 19 are in the present instance shown to be provided with a plurality of spaced vertical openings 20, said openings 20 forming exits for surface water which may find entrance into the grooves.

The locking mechanism forming part of the subject matter of the present invention is arranged within the frame and comprises a reciprocating bolt or locking member designated by the numeral 21. This member is preferably formed of a single piece of metal oblong in contour and rectangular in cross section and somewhat less in length than the length of the frame. The member 21 is positioned between the side wall 9 of the frame and a partition 22, extending parallel with the side 9 and having its opposite ends secured to the ends 10 and 11, the space between the partition and side 9 being sufficient to permit the bolt or locking member 21 to slide. The locking member 21 is provided adjacent to one end with a transverse opening 23 and on its upper side and directly above the opening is provided with a transverse recess 24. The opposite end portion of the bolt or locking member is provided on its upper side with an upwardly and outwardly extending finger 26, which extends beyond the partition 22.

The connection between the shifting member 17 and switch point 7 comprises a pair of sections designated by the numerals 27 and 28. The section 28 has one end pivoted to the switch point 7 and its opposite end is provided with an axial bore 29. The section 27 has one end pivoted to a lateral lug 30 formed on one side and adjacent to one end of the shifting member 17, the said section 27 extending through an opening formed in the side 9 of the frame and also through the opening 23 in one end portion of the bolt or locking member 21. The end portion of the section 27 extending through the openings in the bolt or locking member and side 9 is rectangular in cross section and on one of its longitudinal sides is provided with a plurality of spaced notches 31, adapted to independently receive one of the end walls of the opening 23 in the bolt or locking member, as clearly shown in Fig. 4. The intermediate portion of the section 27 is provided with a circular enlargement 32, corresponding in diameter to the tubular

end of the section 28, and the portion of the section 27 extending beyond the circular enlargement 32 is reduced and rounded, as shown at 33 and of a size to slidably fit in the axial bore 29 of the section 28. By reference now to Fig. 6 it will be seen that a helical retractile spring 34, has one end fixedly secured in the inner end of the axial bore 29, while its opposite end is similarly secured to the portion 33 of the section 27, which is slidably fitted in said bore. With this construction it will be manifest that the sections 27 and 28 are yieldingly held for relative longitudinal movements for a purpose to be described later.

The members for engaging with the member depending from the car and imparting movement of the lock bolt will now be described:—By reference to Figs. 1 to 4 inclusive it will be seen that what will subsequently be termed a trigger 35 has one end pivoted on the upper side of the partition 22 at a point between the terminal of the finger 26 and adjacent end of the frame. The trigger 35 is oblong in contour and substantially rectangular in cross section and extends across the adjacent end portion of the shifting member 17. That side of the trigger adjacent to the finger 26 is provided with a cam surface to bear on the finger 26. Pivoted to the upper side of the partition 22 and between the section 27 of the connection and adjacent end of the casing is a trigger 36, one end portion of which is provided with a rounded head arranged in the recess 24 on the upper side of the bolt or locking member 21, the trigger 24 extending inwardly and across the adjacent end portion of the shifting member. With this construction it will be manifest that the triggers will operate the bolt or locking member, since it can be readily seen when the parts are in locked position, as shown in Fig. 1, that is when the end wall of the opening 23 is received by the inner recess 31 of the section 27, as shown in Fig. 4 that the depending member from a car passing in the direction of the arrow shown in Fig. 1 will first enter the groove 19 and thence engage with the free end portion of the trigger 35. As the depending member passes through the groove the trigger 35 will be moved in the direction of the arrow, whereupon movement will be imparted to the bolt or locking member until the trigger 35 moves out of the path of the depending member, as shown in Fig. 2. During the movement of the trigger 35 and the bolt or locking member 21, it will be seen that the end walls of the recess 24 will move the trigger 36 in a direction opposite to the trigger 35 so that when the movement of the trigger 35 has been completed the trigger 36 will be at substantially right angles to the side 9, as clearly shown in Fig. 2. As

the depending member from the car continues through the groove 19 and engages with the side of the latter to shift the member 17, it will after the said shifting movement of the member 17 has been completed
 5 engage with the free end portion of the trigger 36 and move the said free end portion toward the adjacent end of the frame, thus causing the opposite or rounded end
 10 portion of the trigger to move in the opposite direction which will impart a movement to the bolt or locking member 21 thus moving the end of the opening 23 into one of the recesses 31 of the section 27. During
 15 this last described movement of the bolt or locking member 21, the finger 26 will engage with the trigger 35 and return the same to its original position, as shown in Figs. 1 and 3.

20 In Figs. 7 and 8 I have shown a member connected to the car and positioned to be operated by the driver of the car to engage with the shifting member to perform the operation just described. The construction
 25 herein shown is shown to comprise a shaft 37, journaled in a pair of hangers 38 and 39 depending from the end of the car, one end of said shaft extending beyond one of the hangers and terminating in an inward
 30 extension 40. Fixedly secured to the medial portion of the shaft 37 is an arm 41, one end of which terminates in a laterally extending nose 42 of a size to pass through
 35 either of the grooves 18 and 19. The operating lever is designated by the numeral 43 and has one end fulcrumed on the end of the car, as shown at 44, while its opposite
 40 end portion is provided with a downward extension 45 to bear on the extension 40 on one end of the shaft 37. A coil spring 46 encircles the shaft and has one end secured
 45 to the car, while its opposite end is secured to the arm 41, the function of the spring being to hold the arm in elevated position, as shown in Fig. 8. An operating button
 50 is shown to include a shank portion 47, which extends through a vertical opening in the floor of the car, the lower end of said shank being provided with a head 48 seated
 55 in the operating lever 43, the opposite end portion of said shank extending a short distance above the floor of the car and terminating in a head 49 to form a bearing for the foot of the operator when the latter desires to depress the lever 43, so as to rock
 60 the shaft, whereby the arm 42 will extend vertically downward and pass through the guides and into one of the grooves of the shifting member.

From the foregoing, it is evident that I have provided a device which is comparatively simple in structure and inexpensive in manufacture, embodying few parts and these so arranged that the danger of de-
 65 rangement will be reduced to a minimum.

I claim:—

1. In a switch operating mechanism, the combination with a member depending from a car, the stationary rails, and a pivoted switch rail; of a shifting member operable
 70 by the member depending from the car and positioned between the stationary rails, a connection between the member and switch point, said connection being provided on one side and adjacent to the shifting member with a plurality of teeth, a reciprocating locking member having an oblong opening
 75 adjacent to one end, one end wall of said opening being normally in engagement with the toothed end portion of said connection, and means operable by the member depending from the car for actuating the locking member to move from engagement
 80 with the connection.

2. In a switch operating mechanism, the combination with a member depending from a car, the stationary rails, and a pivoted switch rail; of a shifting member operable by the member depending from the car and positioned between the stationary rails, a connection between the member and switch point, said connection being provided on one side and adjacent to the shifting member with a plurality of teeth, a reciprocating locking member having an oblong opening
 90 adjacent to one end, one end wall of said opening being normally in engagement with the toothed end portion of said connection, and means operable by the member depending from the car for actuating the locking member to move from engagement
 95 with the connection prior to the movement of the shifting member.

3. In a switch operating mechanism, the combination with a member depending from a car, the stationary rails, and a pivoted switch rail; of a shifting member operable by the member depending from the car and positioned between the stationary rails, a connection between the member and switch point, said connection being provided on one side and adjacent to the shifting member with a plurality of teeth, a reciprocating locking member having an oblong opening
 110 adjacent to one end, one end wall of said opening being normally in engagement with the toothed end portion of said connection, means operable by the member depending from the car for actuating the locking member to move from engagement with the connection prior to the movement of the shifting member, and a pivoted member operable by the member depending from the car to move the locking member into engagement
 115 with the connection after the movement of the shifting member.

4. In a switch operating mechanism, the combination with a member depending from a car, the stationary rails, and a pivoted switch point; of a bodily movable shifting
 120 130

member actuated by the member depending
from the car, a connection including a pair
of sections, one of said sections being pro-
vided at one end with a tubular extension
5 for the loose reception of the inner end of
the other section, a retractile spring con-
necting the adjacent ends of said sections,
the upper end of one of said sections being
pivoted to the switch point, the correspond-
10 ing end portion of the other of said sections
being pivoted to the shifting member and
provided with a plurality of teeth, a recip-
rocating locking member having at one end

an oblong opening for the reception of the
said toothed end portion, and means oper- 15
able by the member depending from the car
to reciprocate said locking member and move
one end wall of the opening thereof into and
out of engagement with the said teeth.

In testimony whereof I affix my signa- 20
ture in presence of two witnesses.

MARSHALL L. SHEPHERD.

Witnesses:

E. EDMONSTON, Jr.,

JOHN A. DONEGAN.

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