

A. L. PIPES.
 AUTOMATIC SWITCH FOR RAILWAYS.
 APPLICATION FILED AUG. 11, 1909.

958,531.

Patented May 17, 1910.

2 SHEETS—SHEET 1.

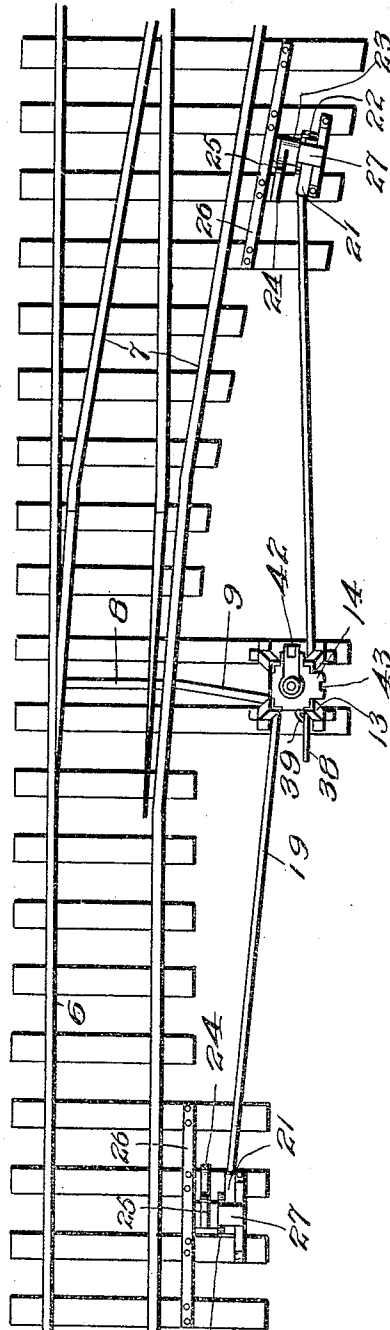


Fig. 1.

WITNESSES

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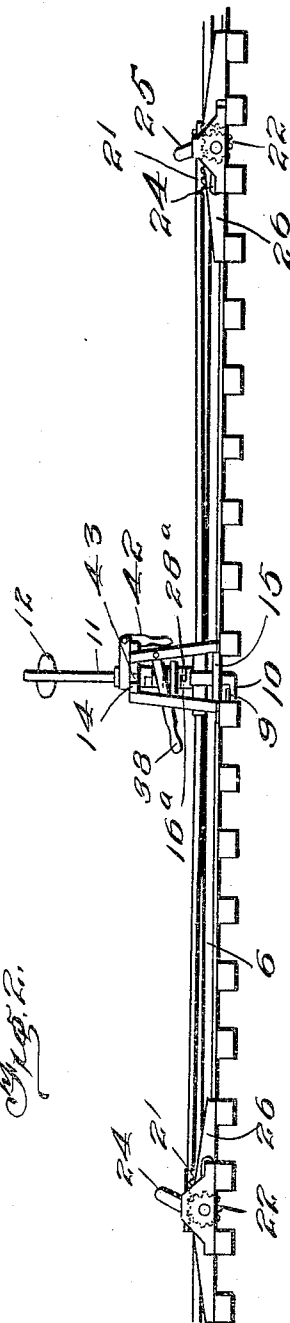


Fig. 2.

INVENTOR

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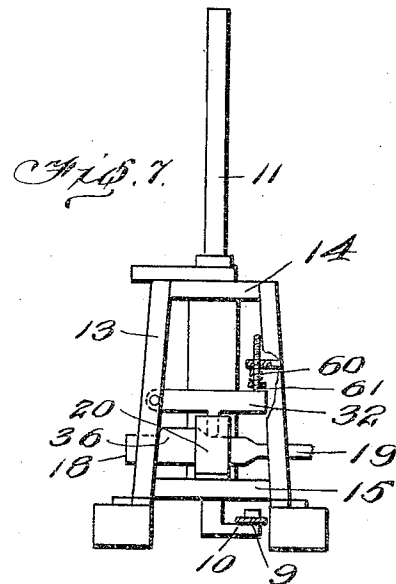
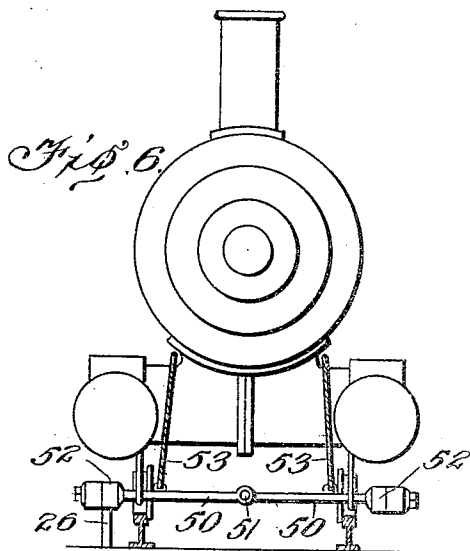
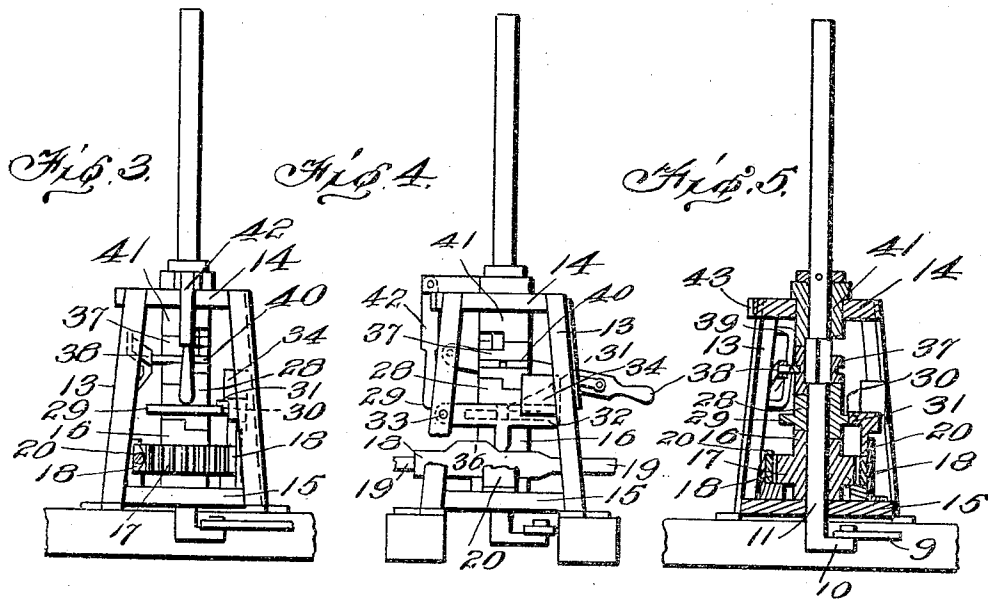
By L. E. Tew

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WITNESSES
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UNITED STATES PATENT OFFICE.

ALBERT L. PIPES, OF CLARENCE, MISSOURI.

AUTOMATIC SWITCH FOR RAILWAYS.

958,531.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, ALBERT L. PIPES, a citizen of the United States, residing at Clarence, in the county of Shelby and State of Missouri, have invented certain new and useful Improvements in Automatic Switches for Railways, of which the following is a specification.

This invention relates to automatic switches for railways, and has for its principal object to provide a mechanism operated by a trip on the engine for throwing the switch when desired, by a train running in either direction. In addition to the automatic operating mechanism the switch stand is provided with a hand operating mechanism, and means are provided whereby either the hand or automatic operating devices may be thrown in gear. Said means comprise specifically a clutch operated by a lever to set the stand for operation in either of the ways referred to. With these and other objects in view, the invention is illustrated in the accompanying drawings, in which—

Figure 1 is a plan view of the mechanism; Fig. 2 is a side elevation; Fig. 3 and Fig. 4 are elevations of the switch stand from different sides; Fig. 5 is a vertical section of the stand; Fig. 6 is a front view showing the tripping device carried by the engine; and Fig. 7 is an elevation of a modification.

Referring specifically to the drawings, 6 indicates the main track rails, and 7 the switch rails. The switch points are connected by a rod 8, and drag-link 9 to a crank 10 at the lower end of the upright shaft 11, which may be provided at the top with a signal lantern, or target 12.

The frame of the stand is indicated at 13, and it is provided with top and bottom plates 14 and 15, through which the switch post, or shaft, 11 extends. Mounted loosely upon said shaft 11 is a clutch-member 16 provided with a spur-gear 17 which meshes with racks 18 carried at the ends of oppositely extending rods 19. The racks are held in engagement with the gear by guides 20. At the opposite or distant end of each rod 19 is a rack 21 which meshes with spur-gear 22 on a rocker 23 having two angular arms 24 and 25 with a guide-track 26 between said arms and the rails. The rack is held in engagement with the gear by a guide 27. The rods will be extended a sufficient distance to locate the rockers and asso-

ciated devices on opposite sides of the switch, so that after either rocker is struck by the tripping devices carried by the engine, sufficient time will elapse for the switch to open or close before the engine reaches the same, and the location of the rockers adjacent the switch and the main track, respectively, permits the operation of the switch by the train passing either toward or from the same.

Mounted upon the shaft 11, above the clutch-member 16, is a double clutch-member 28, which is also loose on said shaft, and it is provided with a peripheral flange 29 notched as at 30 to receive a projection 31 on a latch lever 32, which is pivoted at 33 to the stand and provided with a weight 34 which causes it to normally drop to engage the projection in the notch and so hold the clutch-member against movement, except by the use of sufficient force to lift the latch. The latch lever 32 has a depending arm 35 which is arranged to rest upon the upper edge of one of the rack bars 18, which is provided with a cam 36 inclined at opposite ends and forming a wedge which, when the rod is shifted lengthwise in either direction with sufficient force, will act to lift the latch and release the clutch-member 28.

Mounted upon a squared portion of the shaft 11, above the clutch-member 28, is a double clutch-member 37, which may be shifted up or down by means of a hand lever 38 which is engageable with a catch 39 to hold it as set, and has a collar 40 extending around in a groove in the clutch-member 37 to raise or lower the latter.

Mounted upon the shaft 11, above the clutch-member 37, is a single clutch-member 41 which turns in a bearing recess in the top plate 14 of the stand and is provided with a hand lever 42 for manual operation, the lever being jointed to swing down and engage either one of the notches 43 in the edge of the top plate 14, where it may be locked by ordinary devices.

The clutch-members described are of the ordinary type, having longitudinal projections and notches therebetween to interlock with each other, the spaces between the clutch-members 28 and 41 being sufficient to permit vertical movement of the member 37 to engage the latter with either of the former, according to the movement of the lever 38. The projections 28^a on the lower side of the clutch-member 28 are of less width than the notches 16^a at the top of the

clutch-member 16, whereby a certain amount of rotary movement of the latter is permitted before the member 28 is turned. As stated, the member 16 is turned when the rack bars are shifted lengthwise. At the initial movement, the cam 36 comes in contact with the projection 35 on the latch lever 32 and lifts the same out of engagement with the member 28, and, in consequence of this movement, said latch is fully released before the projection 28^a reaches the end of the notch 16^a, and consequently before the member 28 begins to turn. Continued movement of the rack-bars, however, causes the member 28 to turn. The loose connection provided between the members 28 and 16 is thus solely for the purpose of releasing the latch before the former begins to turn.

When the lever 38 is lowered and the clutch-member 37 is engaged with the clutch-member 28, turning of the latter produced in the order indicated also turns the member 37, and since this member is nonrotatably mounted on a squared part of the shaft 11, said shaft is also turned, thereby throwing the switch. When the member 37 is thus lowered to engagement with the member 28, it is disengaged from the member 41, which, being loose upon the rounded portion of the shaft 11, permits said shaft to turn without moving the hand lever 42. The switch is thus thrown automatically by operation of either rocker, which will be thrown by tripping devices carried by the engine, and to be hereinafter described.

When the lever 38 is lifted, the member 37 is raised to engagement with the clutch-member 41, and is disengaged from the clutch-member 28, and consequently when the member 41 is turned by means of the hand lever 42, the member 37 and the shaft 11 will be also turned, and the switch shifted accordingly; the automatic devices remaining idle. Hence it will be seen that the switch is adapted for automatic or manual operation according to the lowered or raised position of the intermediate clutch member 37.

The tripping devices carried by the engine are shown in Fig. 6, and may comprise arms 50 pivoted at 51, and conveniently located at the front of the engine behind the pilot, and projecting outwardly far enough to strike either of the arms 24 or 25 of the rocker, and preferably provided with a wheel 52 to ride on the guide 26 beside the rocker. Either of the arms 50 may be raised or lowered by a rope 53 connected thereto, and extending to the engine cab for operation by the engineer, whereby either arm may be raised so that it will not strike the rocker, or may be lowered to operative position for the purpose described.

In the modified form shown in Fig. 7, a spring 60 is substituted for the weight to

hold the latch lever 32 down to engagement with the part 16, and the resistance of said spring can be adjusted by the bolt 61 around which it is coiled.

I claim:

1. In a railway switch, the combination with a switch point, of a vertical shaft operatively connected thereto, separate automatic and manual operating devices, and connections between said devices and the shaft including a clutch member located on the shaft between said devices and shift-able up and down on the shaft from the automatic to the manual devices or vice versa, to operate the switch by either.

2. In a railway switch, the combination of a shaft operatively connected to the switch point, upper and lower clutch members loose on said shaft, an intermediate clutch member non-rotatable on said shaft and slidable lengthwise thereon from one of said clutch members to the other, means to shift said intermediate member, a manual operating device connected to the upper clutch member, and automatic devices operatively connected to the lower clutch member.

3. In a railway switch, the combination of a shaft operatively connected to the switch point, upper and lower clutch members loose on said shaft, an intermediate clutch member non-rotatable on said shaft and slidable lengthwise thereon from one of said clutch members to the other, means to shift said intermediate member, a manual operating device connected to the upper clutch member, and automatic devices operatively connected to the lower clutch member, including a yielding latch constructed to prevent operation of the lower clutch member except by special effort.

4. In a railway switch, the combination of a shaft operatively connected to the switch point, a lower clutch member loose thereon, trip-operated devices operatively connected to said lower clutch member, an upper clutch member non-rotatable on the shaft and coöperating with the lower clutch member to turn the shaft when the clutch is engaged, a latch engaging said lower clutch member, and means actuated by said trip-operated devices to release the latch before the clutch members are actuated.

5. In a railway switch, the combination of a shaft operatively connected to the switch point, trip-operated devices and connections between said devices and the shaft including a clutch on the shaft and a latch normally engaging the clutch and preventing operation of the shaft and means actuated by initial movement of the said devices to release the latch.

6. In a railway switch, the combination of a shaft operatively connected to the switch point, trip-operated devices including a re-

5 ciproating rod provided with a cam, a
clutch member loose on the shaft and con-
nected to the rod for rotation thereby, a sec-
ond clutch member operatively connected to
10 the shaft and having an engagement with
said member permitting initial movement of
the latter without moving the former, and a
latch normally engaging the secondary
member and arranged for release by the cam
on initial movement of the rod.

7. In a railway switch, the combination of
a shaft operatively connected to the switch
point, trip-operated devices including recip-
rocating rods extending in opposite direc-
15 tions from the shaft, one of said rods hav-
ing a cam thereon, a clutch member 16 loose
on the shaft and connected to the rods, a co-
operating clutch member 28 operatively
connected to the shaft and having a notch,
20 and a latch lever 32 having a projection
engaging said notch, the connection between
the clutch members being constructed to
permit initial turning of the member 16
without turning of the member 28, said

latch being located for release by the cam 25
at initial movement of the rod.

8. In a railway switch, the combination of
a shaft operatively connected to the switch
point, a clutch member 16 loose on said
shaft, trip-operated devices connected to 30
said member, a double clutch member 28
loose on said shaft, a double shifting clutch
member 37 non-rotatable on the shaft, an
upper clutch member 41 loose on the shaft
and having hand operating devices, means 35
to shift the member 37 to engage either the
member 28 or the member 41, a latch engag-
ing the member 28, said member 16 having
initial lost motion with respect to the mem-
ber 28, and means operated by initial move- 40
ment of the trip-operated devices to release
the latch.

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

ALBERT L. PIPES.

Witnesses:

J. H. NICHOLS,
W. J. DANIEL.