

J. B. TURNER.
AUTOMATIC SWITCH.
APPLICATION FILED JULY 28, 1910.

Patented May 30, 1911.

2 SHEETS-SHEET 1.

993,476.

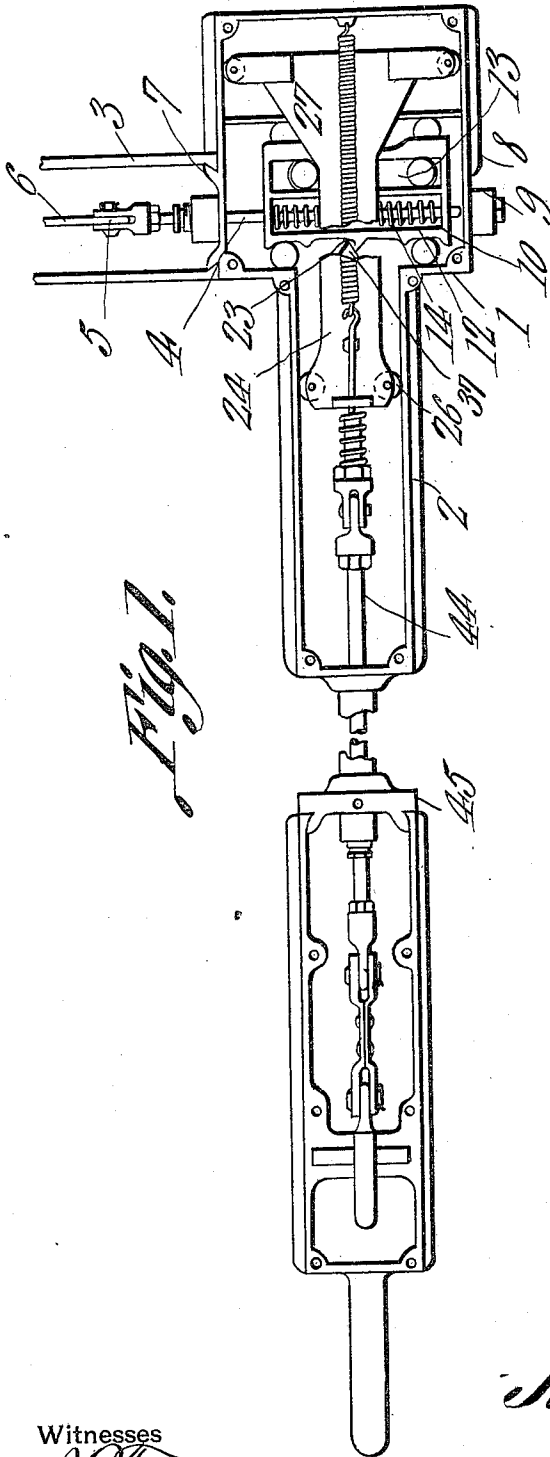


Fig. 1.

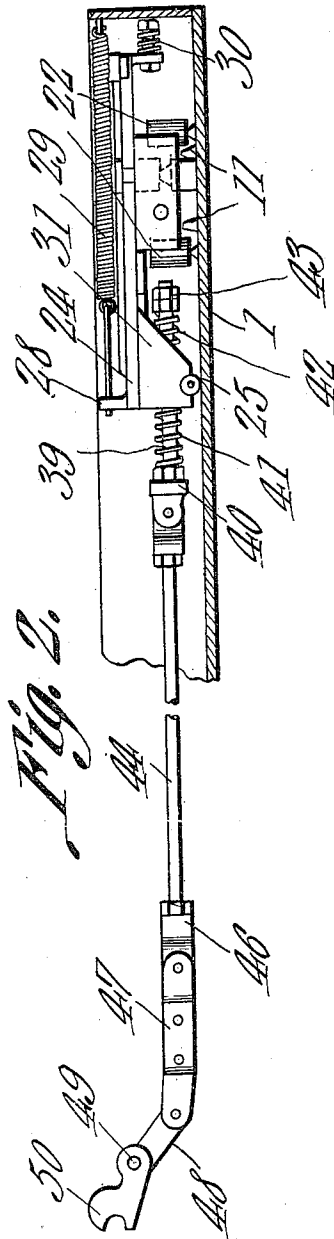


Fig. 2.

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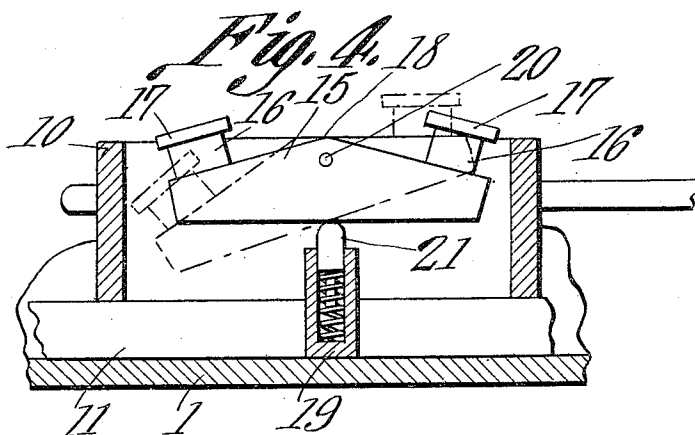
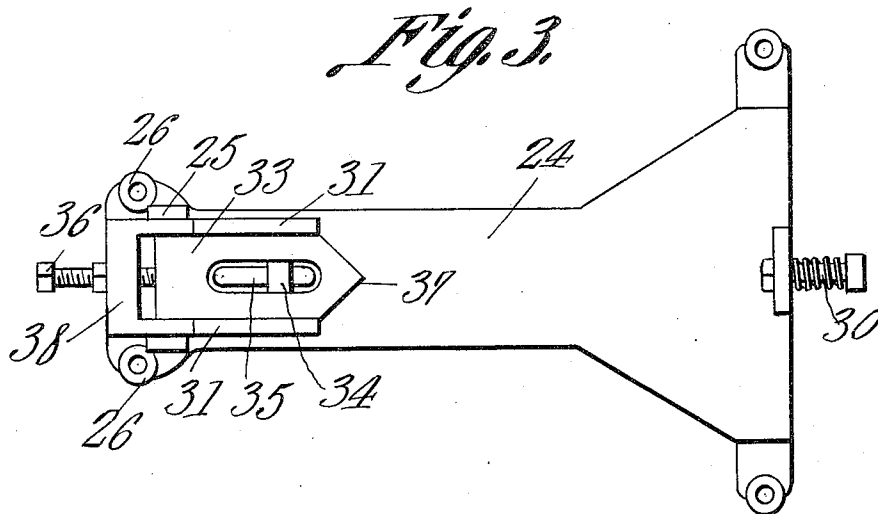
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UNITED STATES PATENT OFFICE.

JOHN B. TURNER, OF FORT SMITH, ARKANSAS, ASSIGNOR TO TURNER AUTOMATIC SWITCH COMPANY, OF FORT SMITH, ARKANSAS.

AUTOMATIC SWITCH.

993,476.

Specification of Letters Patent.

Patented May 30, 1911.

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To all whom it may concern:

Be it known that I, JOHN B. TURNER, a citizen of the United States, residing at Fort Smith, in the county of Sebastian and State of Arkansas, have invented a new and useful Automatic Switch, of which the following is a specification.

This invention relates to automatic switches and is more particularly designed as an improvement upon the structure disclosed in Patent No. 929,053 granted to me on July 27, 1909.

One of the objects of the invention is to improve generally upon the structure covered by said patent and to provide means whereby the mechanism may be more readily operated and wear upon the parts reduced to the minimum.

With the foregoing 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 plan view of the mechanism, the top plates of the casing being removed. Fig. 2 is a side elevation of the mechanism, a portion of one of the casings being shown in section and the other casing being removed. Fig. 3 is a bottom plan view of the shifting carriage. Fig. 4 is a section through the slide and showing the carriage engaging dog therein and the controlling spring beneath the dog.

Referring to the figures by characters of reference 1 designates a box like casing or housing having an extension 2 at one side thereof. Another projection 3 projects from another wall of the casing 1 and preferably at right angles to the extension 2, there being a switch rod 4 slidably mounted within the wall of casing 1 and projecting into extension 2, the rod being pivotally connected, as at 5, to a rod 6 adapted to be attached directly to the switch. Holding ribs 7 are formed upon the wall of the casing 1 for engagement by the walls of the extension 3 and, if desired, similar ribs 8 may be formed upon the opposite wall of casing 1.

An opening may be formed in the wall of casing 1 between the ribs 8, this opening being normally closed by a screw plug 9. When it is desired to extend the rod 4

through the casing at a point between the ribs 8, the plug 9 is removed and is inserted in the opening in the opposite side of the casing. The extension 3 is also disengaged from the ribs 7 and placed in engagement with the ribs 8 so as to properly house the rod 4 when it is shifted to the new position above mentioned.

A cross slide 10 is mounted in the casing 1 and upon supporting ribs or rails 11 formed on or secured to the bottom of the casing 1. This slide has parallel longitudinal slots 12 and 13 therein, the rod being extended longitudinally through the slots 12 and being provided with a spring which bears at its ends against the ends of the slots 12 and is secured, at an intermediate point, to the rod 4. This spring acts as a cushion so that motion will be transmitted therethrough from slide 10 to the rod 4. Mounted within the central portion of the slot 13 is a tumbler 15 in the form of a strip having downwardly diverging upper faces each of which is provided, adjacent its free end, with an upwardly extending roller 16 provided with an annular flange 17. This tumbler is so proportioned and located that, when the slide 10 is centrally located within the casing 1, the apex 18 of the tumbler will be located at the center of the slot 13 but, when said slide is shifted either to the right or to the left, the tumbler can be swung to bring one or the other of its upper faces into the plane occupied by the top of the slide. A socketed member 19 is arranged upon the bottom of the casing 1 directly under the pivot 20 of the tumbler 15 and a spring pressed pin 21 is slidably mounted within this socketed member and constantly bears upwardly against the tumbler. Obviously, when the tumbler is in its intermediate or central position and the bearing pin is in vertical alignment with the fulcrum 20, the tumbler will be maintained with its two upper faces at the same angle to the top of the slide 10. When, however, the slide is shifted so as to bring the pin under either of the arms of the tumbler 15, said tumbler will be shifted by the pin so as to bring one of its upper faces into the plane of the top of the slide.

Upstanding guide rollers 22 are journaled within the casing at opposite sides of the path of the slide 10 and serve to hold said slide in proper position at all times. A

V-shaped projection 23 is formed on one edge of the slide 10 at the center thereof, this projection being provided for the purpose hereinafter set forth.

- 5 An operating carriage 24 is arranged within the casing 1 and above the slide 10 and projects into the extension 2, this carriage being provided at one end with supporting wheels or rollers 25 bearing on the
10 bottom of the casing 1 while side rollers or wheels 26 extend from the front and rear ends of the carriage and bear against the side walls of the casing 1 and of the extension 2. The rear portion of the carriage
15 bears downwardly on the slide 10 and is wedge shaped as shown at 27, this wedge shaped portion constituting the slide shifting portion of the carriage and being adapted to engage and shift either of the
20 flanged rollers 16 heretofore referred to. An ear 28 extends upwardly from one end of the carriage and is connected, by a spring 29 with one end of the casing 1, this spring serving to hold said carriage normally
25 pressed against said end of the casing, there being a buffer or cushioning spring 30 upon the carriage and which is adapted to normally bear against the end of the casing as shown in Fig. 2.
- 30 Parallel guide cleats 31 are formed on or secured to the bottom of the carriage 24 adjacent one end thereof and a locking plate 33 is slidably mounted between these cleats, it being held in adjusted position by a clamping
35 bolt 34 seated in a slot 35 formed within the plate. A screw 36 is employed for adjusting the plate 33 longitudinally between the cleats 31 and upon the bolt 34, one end of this plate being V-shaped or pointed, as
40 shown at 37 and adapted to be seated upon either edge of the projection 23 so as to hold the slide against movement. The cleats or webs 31 are connected at one end by an end plate or flange 38 in which a rod 39 is
45 mounted to slide, said rod being formed with a forked head 40 at the outer end thereof and against which bears a relief spring 41 said spring bearing against the flange 38 above referred to. A pull spring 42 is
50 mounted on the rod 39 between the flange 38 and an adjusting nut 43 or the like located upon that end of the rod 39 arranged beneath the carriage 24. The two springs 39 and 42 act as quickening devices to relieve
55 the carriage of strain incident to the sudden actuation of the rod 30.

- The forked head 40 is pivotally engaged by a draw bar 44 extending beyond the extension 2 and guided in the end wall thereof.
60 This draw rod or bar 44 may be of any desired length and is adapted to extend along the side of the track to the point where the trip engaging mechanism is to be located. At this point is provided a casing 45 in
65 which the rod 44 is slidably mounted, said

rod being provided with a forked head 46 pivotally connected by means of a link 47 with the lower arm of a lever 48. This lever is fulcrumed at an intermediate point within the casing 45, as indicated at 49, there being a hook 50 at the upper end of the lever and which projects above the top of the casing 45, this hook being in the path of a suitable tripping device, not shown, and which is adapted to be carried by a locomotive, car, or the like approaching the switch.

It is to be understood that when the switch operating mechanism has its parts in their normal positions, the slide 10 is close to one or the other of the sides of the casing 1 and the points of the locking plate 33 is seated within one of the notches 23. The shifting portion 27 of the carriage is held close to one end of the casing by the spring 29. While the slide is located close to one side of the casing, the spring pressed pin 21 is disposed at one side of the fulcrum 20 of the tumbler 15 and, therefore, one arm of the tumbler is held elevated by the spring pressed pin and with its upper face in the same plane with the top of the slide 10.

When a car or locomotive approaches the switch and it is desired to shift said switch a tripping element, not shown, is lowered so as to strike the hook 50 as the car passes over the casing 45. When this hook 50 is thus engaged, the lever 48 will be swung upon its fulcrum and will pull upon the rod or bar 44 through the link 47. It will then be transmitted through this rod to the carriage 24 through rod 39 and spring 42 and the carriage will therefore be drawn longitudinally. This will result first in the withdrawal of the point 37 from the notch 23, thus releasing the slide 10. The further movement of the carriage will bring one of the edges of the shifting portion 27 of the carriage into engagement with the uppermost roller 16, said edge portion passing under the flange 17 of the roller. As the guide continues to move this edge of the shifting portion 27 will force the roller 16 laterally and the tumbler 15 will of course move therewith and cause a corresponding movement of the slide 10. As the flange 17 laps the carriage, the tumbler will not swing downwardly out of the path of the carriage but will remain in engagement therewith. As the slide thus shifts laterally, the lower inclined edge of the tumbler will ride upon the spring pressed pin 21 and depress it, thus placing the spring thereof under stress.

Upon the completion of the forward movement of the carriage 24, and as soon as the hook 50 is released, the spring 29 will return the carriage and the parts connected thereto, to initial positions. As soon as the edge of the shifting portion 27 is withdrawn in this manner from engagement with the

roller 16, the spring pressed pin 21, which is in position under the lower arm of the tumbler, will shift said arm upwardly so as to bring the other roller into position above the slide 10 while the roller which has been engaged by the carriage, will be swung downwardly into the slot 13. When the carriage is brought back by the spring 29, the point 37 of the locking plate 33 becomes seated upon one side of the projection 23 and the slide 10 is therefore locked in this shifted position. As the switch point moves with the slide, through the connections 5 and 6 and the rod 4, it will be apparent that said point will also be locked in this manner. Should it be desired to return the switch to its first position, the lever 48 is again operated in the manner hereinbefore described and the foregoing operation is repeated with the exception that the other edge of the shifting portion 27 of the carriage will engage the roller 16 which has been elevated so that, as the carriage is drawn forward, the slide 10 will be moved in the opposite direction. By mounting the carriage on guide or supporting wheels or rollers and by mounting the slide between guide rollers, the operation of the mechanism can be readily effected. Moreover the particular arrangement of springs permits the parts to operate with no danger of any of them becoming broken as a result of the sudden action of the parts such as might occur should the operating car be moving at a high speed. It is to be understood that when the pointed end portion of the slide 10 bears against either edge of the projection 23, it serves to thrust said projection laterally and thus throw the slide 10 to the limit of its movement provided such limit has not already been reached. The slide 10 and projection 23 thus cooperate to complete the movement of the slide 10 as well as to lock said slide in its shifted position.

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. Switch operating mechanism including a cross slide, cushioned means connected thereto for transmitting motion therefrom to the switch tongue, a shifting carriage extending across the slide, cushioned means for

moving the carriage in one direction, means for automatically returning the carriage to initial position, cooperating means upon the slide and carriage for shifting the slide successively in opposite directions during successive movements of the carriage in one direction, and anti-friction guide devices for the slide and carriage respectively.

2. Switch operating mechanism including a casing, a cross slide movably mounted therein, there being openings in opposite sides of the casing, an extension, (means upon the casing for holding the extension upon either side of said casing,) cushioned means extending from the slide and through either of the openings and into the extension for transmitting motion from the slide to a switch tongue, a slide operating carriage, and means operated by the carriage during successive movements in one direction, for shifting the slide in opposite directions.

3. Switch mechanism including a cross slide, means operated thereby for operating a switch tongue, a shifting carriage extending across the slide, means for operating the same, cooperating means upon the slide and carriage for shifting the slide in opposite directions successively during successive movements of the carriage in one direction, and adjustable means upon the carriage for normally engaging the slide to hold said slide against movement.

4. The combination with a casing, of a cross slide, means for transmitting motion therefrom to a switch tongue, a carriage setting across the slide and movable transversely thereof, means for actuating the carriage, cooperating means upon the slide and carriage for moving the slide successively in opposite directions during successive movements of the carriage in one direction, an adjustable locking device upon the carriage, yielding means for holding the carriage normally in a predetermined position and the locking device normally in engagement with the slide, a buffer carried by said carriage and normally contacting with the casing.

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

JOHN B. TURNER.

Witnesses:

GEORGE D. WILLHITE,
JOHN BRIZZOLARA.