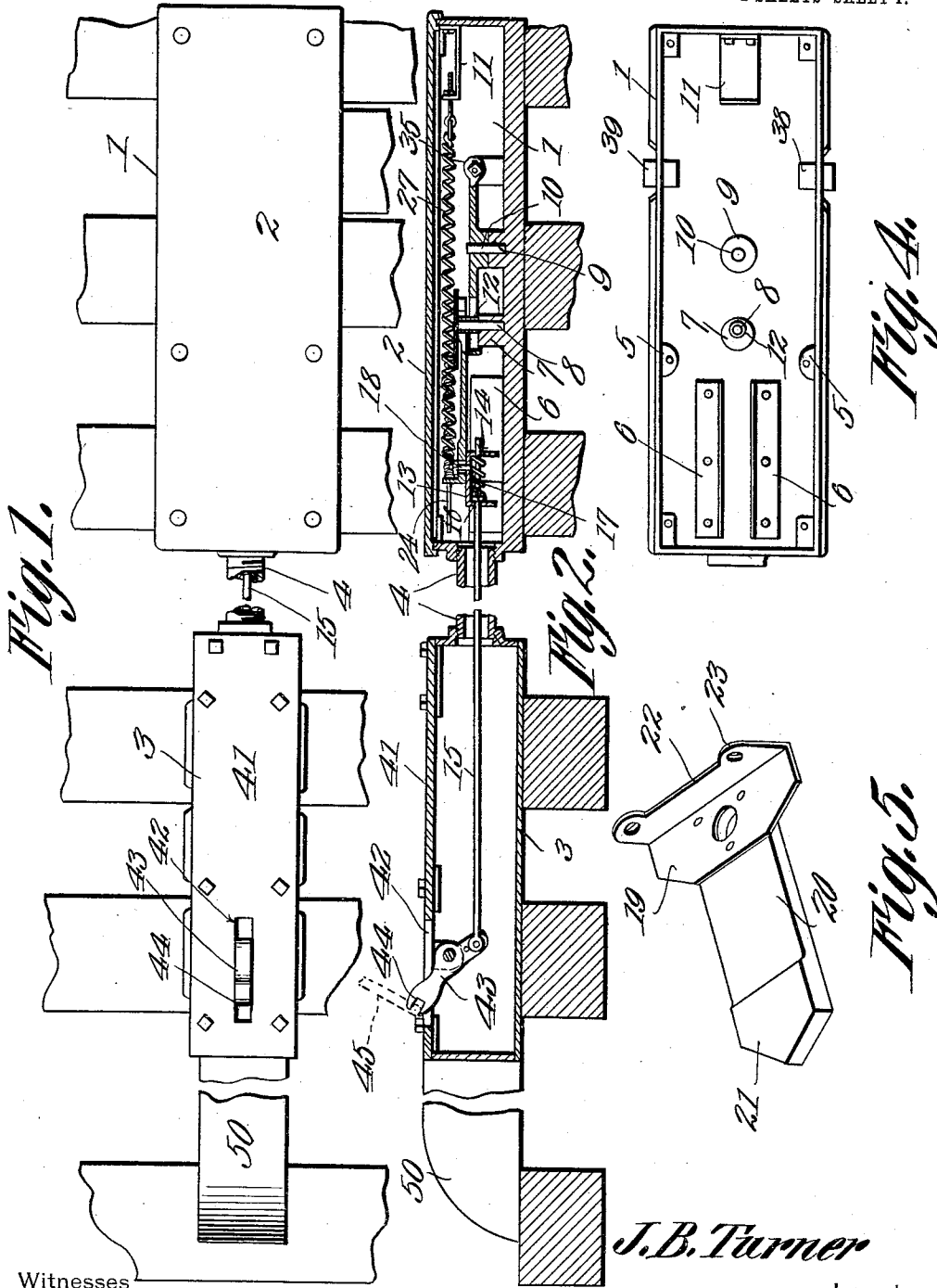


J. B. TURNER.
 AUTOMATIC SWITCH OPERATING MECHANISM.
 APPLICATION FILED SEPT. 7, 1912.

1,065,484.

Patented June 24, 1913.

2 SHEETS—SHEET 1.



Witnesses
A. B. Woodson.
S. H. Wilson

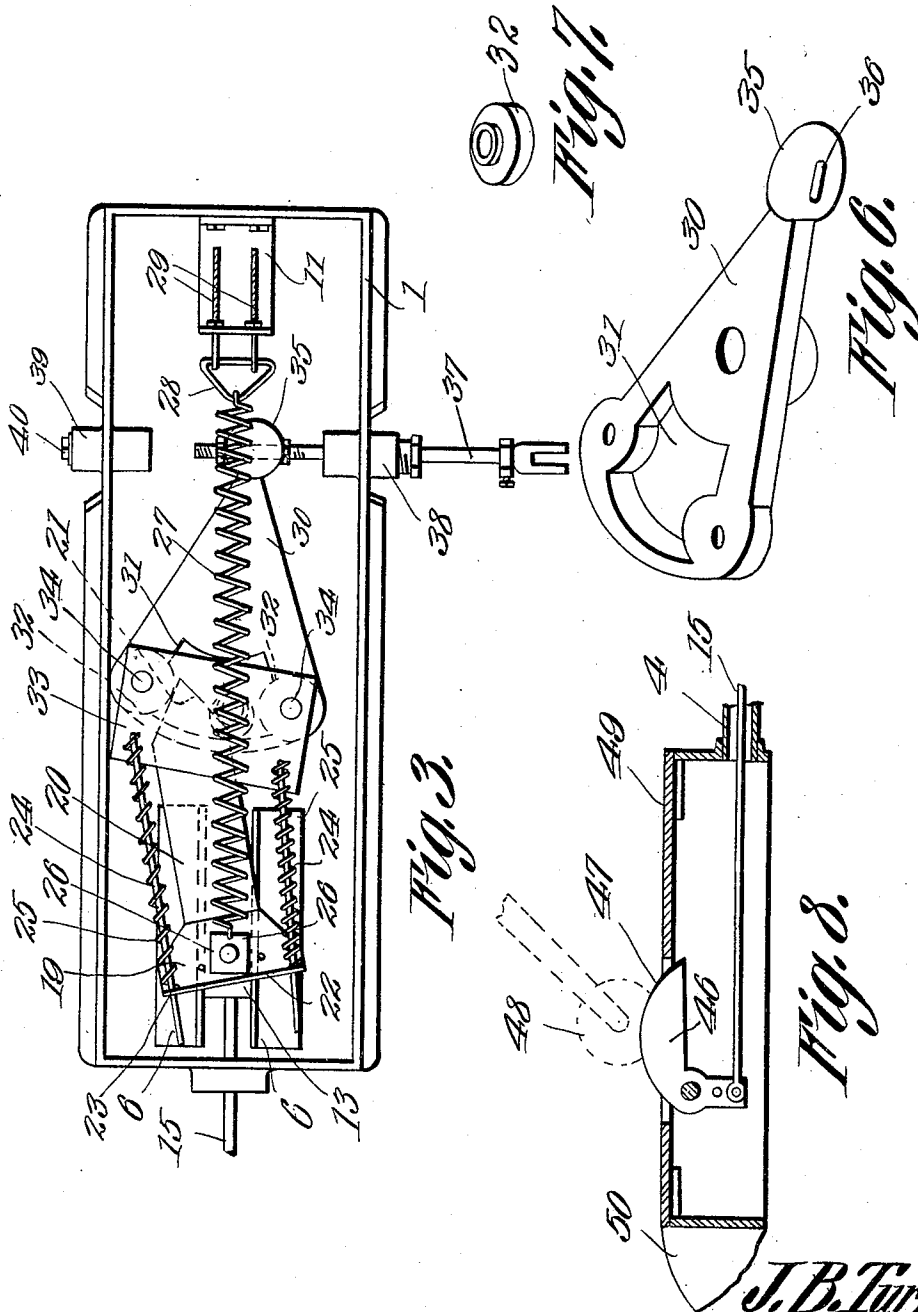
J. B. Turner
 Inventor,
 by *C. A. Snow & Co.*
 Attorneys.

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Witnesses
J. B. Woodward.
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UNITED STATES PATENT OFFICE.

JOHN B. TURNER, OF FORT SMITH, ARKANSAS.

AUTOMATIC SWITCH-OPERATING MECHANISM.

1,065,484.

Specification of Letters Patent.

Patented June 24, 1913.

Application filed September 7, 1912. Serial No. 719,236.

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-Operating Mechanism, of which the following is a specification.

This invention relates to automatic switches and is more particularly an improvement upon the structures disclosed in Patent No. 929,053, issued to me on July 27, 1909, and in Patent No. 993,476, issued to me on May 30, 1911.

One of the objects of the present invention is to provide mechanism of this character having a spring for throwing the switch, there being car operated means for setting the mechanism and then releasing it so that the spring will be free to shift the switch point.

A further object is to provide mechanism of this character which is positive in operation and which will securely hold the switch point in the position to which it has been shifted.

A further object is to provide switch operating mechanism which is simple in construction and the parts of which will not readily get out of order, the said parts being completely housed and thus protected from dirt, snow, etc.

With the foregoing and other objects in view which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of the invention herein disclosed, can be made within the scope of what is claimed, without departing from the spirit of the invention.

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

In said drawings:—Figure 1 is a plan view of the switch operating mechanism, a portion of the connecting tube or housing being broken away. Fig. 2 is a vertical longitudinal section through the parts shown in Fig. 1. Fig. 3 is a plan view of one of the housings with its top removed. Fig. 4 is a plan view of said housing with the mechanism removed therefrom. Fig. 5 is a perspective view of the shifting tongue. Fig. 6 is a detail view of the pivoted seg-

ment. Fig. 7 is a detail view of one of the rollers used in connection with said segment. Fig. 8 is a longitudinal section showing a modified form of tripping device and its housing, the car carried means for actuating said device being indicated by dotted lines.

Referring to the figures by characters of reference 1 designates the main housing of the apparatus, said housing being provided with a cap or cover plate 2 which may be secured thereto in any suitable manner. One end of this housing 1 is connected to one end of a supplemental housing 3 by means of a tube 4 of any desired length, it being designed to arrange the housing 1 at one side of the switch point to be shifted, while the housing 3 can be located at any desired distance from the switch, it being understood that both housings are to be located close to one side of or else between the rails of the track.

The housing 1, as shown in Fig. 4, has ears 5 extending inwardly therefrom for the reception of fastening devices whereby the cover plate 2 is secured in place. Parallel oppositely disposed angle strips 6 are secured upon the bottom of the housing 1 and adjacent that end thereof from which the tube 4 extends. A boss 7 extends upwardly from the bottom of the housing at a point beyond the inner ends of the guide strips 6 and this boss is provided with an eccentrically disposed upstanding pivot pin 8. Another boss 9 extends upwardly from the bottom of the housing, it being understood that the centers of both of these bosses 7 and 9 are disposed in alinement with the longitudinal center of the passage formed between the guide strips 6. A pivot pin 10 extends upwardly from the center of the boss 9. Secured to that end of the housing 1 remote from the tube 4 is an angular bracket 11. The upstanding eccentrically disposed pin 8 carries an anti-friction roller or sleeve 12 which is for the purpose hereinafter set forth.

A U-shaped slide 13 is mounted on the bottom of the housing 1 and between the guides 6 and is provided, in its ends, with opening 14 through which extends a jointed draw rod 15. This rod has a flange or nut 16 thereon and between the ends of the slide and a spring 17 extends around the rod and bears at one end against said flange or nut 16 and at its other end against the

other end of the slide 13. This construction has been clearly shown in Fig. 2.

A pivot stud 18 extends upwardly from the slide 13 and is engaged by a head 19 from which extends a tongue 20, the free end of the tongue being V-shaped, as shown at 21, so as to form a wedge. A flange 22 extends upwardly from the end of the head 19 and has eyes 23. These eyes are slidably engaged by rods 24 having coiled springs 25 mounted thereon, said springs bearing at one end against the flange. A nut 26 or the like is mounted on the stud or pivot pin 18 and is engaged by one end of a coiled spring 27, the other end of said spring being attached to a stirrup 28 which, in turn, is connected adjustably to the bracket 11 by means of parallel bolts 29. Thus it will be seen that spring 27 exerts a constant pull upon the slide 13 and the tongue 20.

Pivotally mounted on the pin 10 and bearing downwardly on the boss 9 is a segmental member 30 having an arcuate slot 31 in the broad end thereof and through which the pin 8 and roller 12 extend. Anti-friction rollers 32 are mounted upon the segmental member 30 adjacent the ends of the arcuate edge thereof and a top plate 33 extends over these rollers 32 and is attached to the segmental member 30 by means of pins or studs 34 on which the rollers 32 are mounted. The rods 24 are pivotally connected to the plate 33 adjacent the respective ends thereof and the springs 25 are adapted to bear against the plate or, rather, against the downturned end portions of the rods where they engage the plate 33.

That end of the segmental member 30 farthest removed from the rollers 32 is provided with a ball-like extension 35 formed with a longitudinal slot 36. This slot is adapted to receive loosely one end of a connecting rod 37 adapted to be attached in any suitable manner to the switch point to be shifted. The rod 37 extends through a tubular guide member 38 formed on one side of the housing 1. A similar tubular guide member 39 may be formed on the other side of the housing. It is to be understood, however, that the rod 37 is designed to extend through only one of these guide members and, therefore, the guide member not in use will, at this time, be closed in any suitable manner as by a screw plug 40.

As shown in Fig. 3, the wedge-shaped end 21 of the tongue 20 is adapted to project between the roller 12 and either one of the rollers 32, thus to shift said roller 32 laterally and cause the segmental member 30 to swing about its pivot and shift rod 37 longitudinally. The parts are retained in this position by the spring 27 which exerts a constant pull upon the slide 13 and exerts its force, through the springs 25, against the plate 33. When the segmental member

is shifted toward one side of the housing 1, as shown in Fig. 1, one of the springs 25 is under greater stress than the other, this being due to the fact that one of the rods 24 is almost withdrawn from its eye 23 while the other rod is extended a considerable distance through the eye engaged thereby.

Rod 15 extends longitudinally through the tubular connection 4 and into the housing 3. The top plate 41 of this housing has a slot 42 through which projects one arm of a bell crank lever 43. This projecting arm is preferably forked, as shown at 44. The other arm of the bell crank lever is pivotally connected to the rod 15.

When it is desired to shift the switch, a suitable shifting or tripping device, such as a stirrup, loop or the like, indicated generally at 45, may be lowered from the car approaching the switch and this tripping device will move against the forked end 44 of the bell crank lever 43 and cause said lever to swing about its fulcrum and to pull on the rod 15. Slide 13 will thus be drawn toward the tubular member 4 by the rod 15. As the head 19 moves with the slide 13, said head will likewise be shifted toward the tubular member 4, the movement of the slide being sufficient to withdraw the wedge-shaped end 21 of the tongue 20 from between the roller 32 engaged thereby and the roller 12. As the head 19 and tongue 20 are thus moved toward the end of the housing 1, the tension of the compressed spring 25 is gradually diminished and, when the tension of the two springs 25 becomes equalized, it will be found that the flange 22 is parallel with the edge of plate 33. During the movement of flange 22 to this position, it is of course necessary for the wedge-shaped end of the tongue to shift partly around the deflecting roller 12 and during this movement of the point of the tongue, it travels along the top of the boss 7, this being permitted in view of the fact that the pin 8 is eccentrically mounted on the boss and a comparatively broad ledge is thus provided on which the point of the tongue can travel. Thus, upon the completion of the movement of the bell crank lever 43 under the action of the tripping device 45, the point of the tongue 20 is brought slightly between the deflecting roller 12 and the roller 32 opposite to the one engaged in Fig. 3. As soon as the tripping device passes out of engagement with the bell crank lever 43, spring 27, which has been placed under increased stress, is free to draw the slide 13 and the tongue 20 longitudinally within the housing 1. Thus the pointed end of the tongue will wedge between the deflecting roller 12 and the roller 32 nearest thereto and, consequently, the segmental member 30 will be shifted about its pivot so as to cause its extension 35 to pull on rod 37 and thereby

move the switch point to its new position. When the lever 43 is again actuated in the manner hereinbefore described, the foregoing operation is repeated whereupon the parts are returned to the positions illustrated in Fig. 3.

Instead of utilizing a forked bell crank lever such as shown in Fig. 2, a bell crank lever 46 may be employed, said lever having a cam arm 47 adapted to be engaged and depressed by a roller 48 connected to the car structure. This roller, when passing over the housing 49, will depress the cam arm 47 and cause the rod 15 to be actuated in the manner hereinbefore described. It is to be understood that if desired, a guide 50 may lead up to the end of housing 3 or housing 49 so as to prevent the tripping device 45 or the roller 48 from becoming hung on the housing 3 or 49.

By providing spring 17, the bell crank lever 43 can be swung downwardly into slot 42 as when a wagon wheel passes thereover. Under these conditions the spring 17 is placed under compression and, after the wheel passes off the bell crank lever, spring 17 will return the forked end of the lever to its normal position, as shown in Fig. 2.

Instead of providing the tubular connection 4 between the two housings, said connection may be dispensed with in which event the rod 15 may be mounted in bushings located in the housings. These bushings have not been shown.

What is claimed is:—

1. In an automatic switch the combination with a pivoted member, a switch shifting rod extending therefrom, and a deflecting device extending into said member, said member being adapted to swing relative to said device, of a slide, a wedging element pivotally mounted on the slide, yielding means for holding the wedging element normally projected between the deflecting device and a portion of said pivoted member, means for shifting the slide against the action of the yielding means and yielding connections between the wedging element and said pivoted member for automatically shifting said element from one side to the other of the deflecting device during the movement of the slide out of normal position.

2. An automatic switch including a pivoted member, means for connecting the same to a switch point, a deflecting device extending into said member, the said member being adapted to swing relative to said device, a wedging element mounted to slide and swing, means for shifting said element out of normal position, connections between said element and the pivoted member for shifting said element automatically from one side to the other of the deflecting device, and means for automatically drawing said wedging element, when released, back to normal

position and between the deflecting device and a portion of the pivoted member to shift said member.

3. An automatic switch including a pivoted member, means for transmitting motion therefrom to a switch point, a fixed deflecting device extending through said member, a wedging element mounted to slide and swing, said element normally projecting between the deflecting device and one side portion of the pivoted member, yielding means for holding said element in such position and thereby to hold the pivoted member against movement, means for sliding the wedging element into engagement with the pivoted member and against the action of said yielding means, and connections between said wedging element and the pivoted member for shifting the position of the wedging element from one side to the other of the deflecting device, said yielding means operating to return the wedging element into position between the deflecting device and one side of the pivoted member upon the release of the wedging device from its operating means.

4. An automatic switch including a pivoted member, means for transmitting motion therefrom to a switch point, anti-friction devices carried by said member and adjacent the sides thereof, a deflecting device extending between said anti-friction devices, said pivoted member being adapted to swing relative to the deflecting device, a wedging element mounted to slide, yielding means for holding the wedging element normally projected between the deflecting device and one of the anti-friction devices, means for sliding the wedging element out of normal position, connections between the wedging element and the pivoted member for swinging said element to the opposite side of the deflecting device, said yielding means operating to shift the wedging element between said deflecting device and the other anti-friction device upon the release of the wedging element from its operating means.

5. An automatic switch including a pivoted member, means for transmitting motion therefrom to a switch point, oppositely disposed engaging devices upon said member, a deflecting device extending between the engaging devices, said pivoted member being adapted to swing relative thereto, a wedging element mounted to slide and swing, said element being normally projected between the deflecting device and one of the engaging devices to hold the pivoted member against movement, a spring for holding the wedging element in normal position, means for sliding said wedging element out of normal position, and connections between the wedging element and pivoted member for shifting said element from one side to the

other of the deflecting device during the movement of the wedging element against the action of the spring.

6. An automatic switch including a pivoted member, means for transmitting motion therefrom to a switch point, engaging devices mounted on said member adjacent opposite sides thereof, a deflecting device extending between said engaging devices, the said member being adapted to swing relative to the deflecting device, a wedging element mounted to slide and swing, said element being normally positioned between the deflecting device and one of the engaging devices to hold the pivoted member against movement, a spring for holding the wedging element in normal position, means for sliding said element to shift it out of normal position, and connections between the wedging element and the pivoted member for shifting said element from one side to the other of the deflecting device during the movement of said element against the action of the spring.
7. An automatic switch including a pivoted member, means for transmitting motion therefrom to a switch point, engaging devices mounted on said member adjacent opposite sides thereof, a deflecting device extending between said engaging devices, the said member being adapted to swing relative to the deflecting device, a slide, a wedging element pivotally mounted on the slide, a spring for holding said wedging element normally projected between the deflecting device and one of the engaging devices, spring connections between the pivoted member and the wedging element, and means for shifting the slide to withdraw the wedging element out of normal position, said spring connections constituting means for swinging the wedging element about its pivot and from one side to the other of the deflecting device during the movement of the wedging element with the slide in one direction, and a spring for drawing the wedging element into position between the deflecting device and either of the engaging devices.
8. In an automatic switch the combination with a pivoted element, and means for transmitting motion thereto from a switch point, said element having an arcuate slot, of a deflecting device extending into the slot, anti-friction devices carried by said member and adjacent opposite ends of the slot, a plate movable with the pivoted member, a slide, a wedging element pivotally mounted on the slide, rods connected to the end portions of the plate and slidably engaging the wedging element, springs upon the rods and bearing against the plate and element, a spring connected to the wedging element for holding it normally projected between the deflecting device and either one of the anti-friction devices, and means for shifting

the slide to withdraw the wedging element from such position, the first named springs cooperating to shift the element from one side to the other of the deflecting device during such sliding movement.

9. An automatic switch including a housing, a member pivotally mounted therein, means for transmitting motion from the member to a switch point, anti-friction rollers carried by said member, an arcuate slot within the member and between the rollers, a deflecting device extending through the slot, said member being mounted to swing relative to said device, a plate movable with the pivoted member and extending over the deflecting device, a slide, a head pivotally mounted thereon, a tongue extending from the head and having a wedge-shaped end, a spring connected to the head for holding said end of the tongue normally seated between the deflecting device and one of the anti-friction rollers, means for shifting the slide in one direction to withdraw the tongue from between the deflecting device and anti-friction roller, and cooperating means connecting the plate and the head for automatically swinging the tongue laterally during the movement of the slide against the action of the spring, to position the free end of the tongue between the deflecting device and the other anti-friction roller.

10. An automatic switch including a housing, a member pivotally mounted therein, means for transmitting motion from the member to a switch point, anti-friction rollers carried by said member, an arcuate slot within the member and between the rollers, a deflecting device extending through the slot, said member being mounted to swing relative to said device, a plate movable with the pivoted member and extending over the deflecting device, a slide, a head pivotally mounted thereon, a tongue extending from the head and having a wedge-shaped end, a spring connected to the head for holding said end of the tongue normally seated between the deflecting device and one of the anti-friction rollers, means for shifting the slide in one direction to withdraw the tongue from between the deflecting device and anti-friction roller, cooperating means connecting the plate and the head for automatically swinging the tongue laterally during the movement of the slide against the action of the spring, to position the free end of the tongue between the deflecting device and the other anti-friction roller, means for guiding the point of the tongue in its movement from one position to another.

11. In an automatic switch the combination with a housing, and guides therein, of a member pivotally mounted in the housing, means for transmitting motion from said member to a switch point, anti-friction rollers carried by the pivoted member, there

being a slot within said member and between the rollers, a plate carried by the member and extending over the slot, a deflecting device connected to the housing and
5 projecting through the slot, said member being adapted to swing relative to said device, a slide mounted between the guides, a tongue pivotally mounted on the slide, said tongue having a wedge-like end, a spring
10 for holding said end normally seated between the deflecting device and one of the anti-friction rollers, means for shifting the slide against the action of the spring to withdraw the end of the tongue from such

position, and cooperating means connecting 15 the plate and tongue for automatically swinging the tongue laterally from one side to the other of the deflecting device during the movement of the slide against the action of the spring. 20

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:

MILES DICKINS,
E. S. RICHARDSON.

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