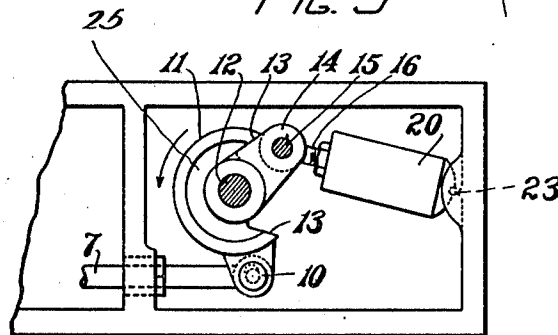
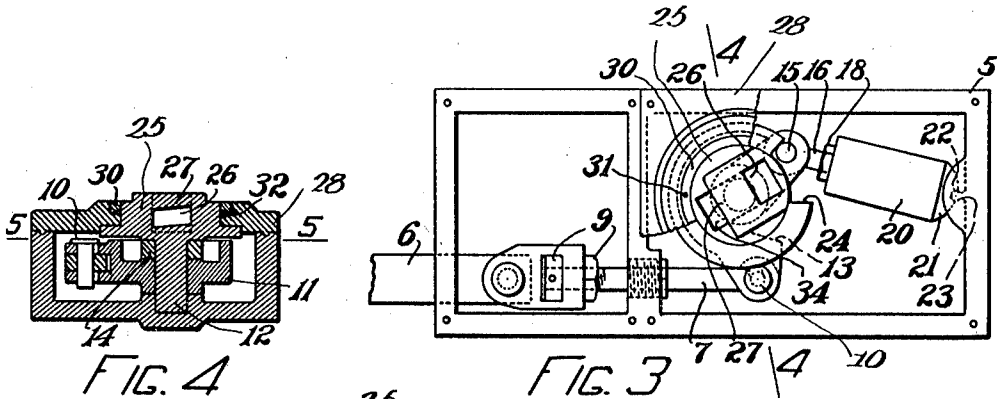
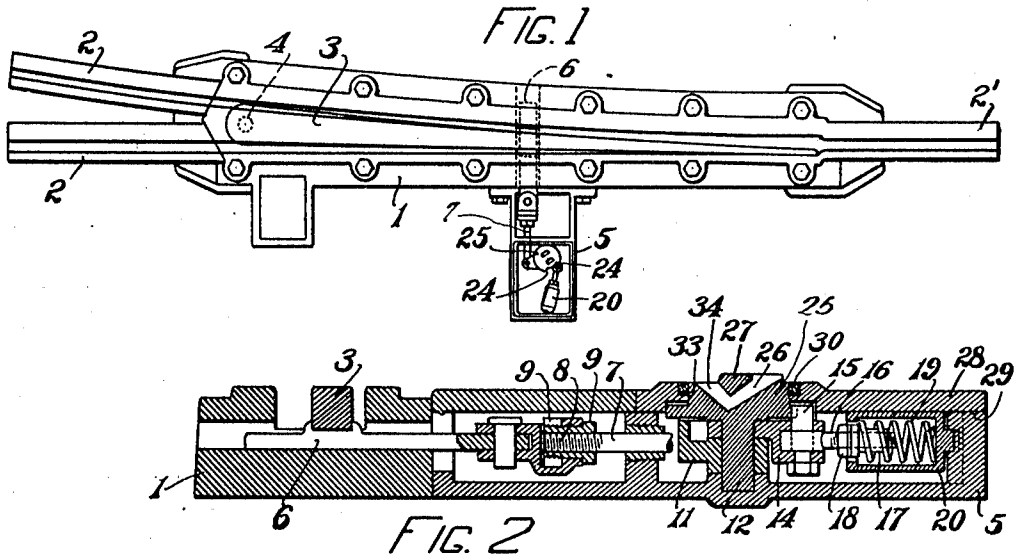


F. H. ELLIS.
 SPRING SWITCH.
 APPLICATION FILED JUNE 26, 1911.

1,061,530.

Patented May 13, 1913.



WITNESSES
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FIG. 5

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SPRING-SWITCH.

1,061,530.

Specification of Letters Patent.

Patented May 13, 1913.

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To all whom it may concern:

Be it known that I, FRANK H. ELLIS, a citizen of the United States, residing in Somerville, county of Middlesex, Commonwealth of Massachusetts, have invented certain new and useful Improvements in Spring-Switches, of which the following is a specification, reference being had to the drawings accompanying the same and forming a part thereof.

My invention relates to new and useful improvements in spring-switches designed to yieldingly lock a switch-tongue in a predetermined position.

The objects of my invention are to produce a simple and efficient device for firmly, yet yieldingly, locking a switch-tongue in either of two positions, as desired, together with mechanism for changing the direction of thrust of the locking parts at will, without disconnecting and readjusting the parts.

A further object of my invention is to so design the parts that it will be impossible for the operator to throw the locking mechanism into a mid-position so as to render the locking-spring and connecting parts inoperative.

Another object of my invention is to provide means whereby the locking mechanism can be easily and instantly thrown by the use of the ordinary switch-stick so as to lock the switch-tongue in either of its locking positions, all of which will be more fully pointed out hereinafter, reference being had to the drawings accompanying this specification.

In the drawings—Figure 1 is a plan of the switch showing my improved locking device connected to the switch structure; Fig. 2 is a transverse sectional elevation taken through the locking mechanism and switch structure; Fig. 3 is a plan of the locking mechanism with the cover of the box containing the same removed; Fig. 4 is a sectional elevation of the locking mechanism taken on line 4—4 Fig. 3; Fig. 5 is a sectional plan of a portion of the locking mechanism taken on line 5—5, Fig. 4.

In the drawings embodying my improved locking device, 1 represents the body of the switch; 2, 2, etc., the connecting rails; and 3 the switch-tongue pivoted to the switch structure by means of the pivot 4 at its heel;

5 is a box containing the mechanism of my improved locking device. This box 5 may be joined to the body 1 in any suitable manner. The switch-locking mechanism consists of the transversely movable member 6 which may be connected to the switch-tongue 3 in any suitable manner at its outer end. Its inner end is adjustably secured to the longitudinally movable connection rod 7 by a threaded portion 8, and made adjustable by means of the locking nuts 9, 9. The inner end is connected by means of the pivot 10 to the rotative lever 11, which is mounted to rotate on the pivot 12. The rotative lever 11 has a section of its periphery cut away so as to leave the shoulders 13, 13. Upon the pivot 12 there is rotatively mounted a link member 14, its free end having a hole designed to receive the pivot-pin 15. The pivot-pin 15 is secured in the connecting bolt 16 which is threaded to receive the adjustable collar 17 and the locking nut 18. The adjustable sleeve 17 is formed and arranged to receive the outer end of the spring 19, the outer end of this spring being bent inwardly to bear upon the member 18, its inner end resting against the inner end of the spring-case 20. The shell or socket 20 has the projecting end 21 provided with a semi-circular recess 22 adapted to fit upon the circular projection 23 formed on the interior wall of the box 5 so that the spring-case 20 is free to oscillate or rotate around said projection 23. The pivot 15 extends above the surface of the link 14, as indicated in Fig. 2, in order that the projecting shoulders 24, 24, formed upon the rotating pivot 25 may contact with it so as to rotate the link 14 upon the pivot 12 to change the direction of thrust of the eye connection 16 and the spring 19. The rotating pivot 25 is provided with the slot 26 which is so made as to leave the bridging portion 27. This bridging portion 27 serves the purpose of holding the switch-stick in place when it is inserted in the slot 26 to rotate the pivot 25.

The operation of my device is as follows:—As will be noted in Figs. 1 and 3, the link 14 is so mounted that the spring 19, acting through the eye-bolt 16 will press its sides against either of the shoulders 13 of the rotative lever 11, thus exerting a pressure to rotate it in the direction of the

arrow, as shown in Fig. 5. This exerts a pull on the connecting rod 7 in a right hand direction and serves to hold the tongue in what we will term the right hand position, as shown in the drawing Fig. 1. If it is desired to cause the tongue of the switch to be locked in a left hand position, the switch-stick is inserted in the slot 26 and the pivot 25 is rotated in a direction opposite to the arrow, as shown in Fig. 5, and its shoulder 24 bearing on the pin 15 causes the link 14 to rotate until the pivot 15 passes beyond a line drawn from the center of the projection 23 to the center of the pivot 12. The moment this pivot 15 passes beyond the line, it immediately snaps over so that the side of the link 14 contacts with the opposite shoulder 13 from the one it is shown in contact with in Fig. 5. The portion 11 will then be rotated in an opposite direction, and through the connection 7 will cause the tongue 3 to be yieldingly locked in a left hand position. It will be noted that the space between the shoulders 13, 13, is greater than the width of the link 14. This space enables the tongue 3 to move a sufficient distance to let the flange of a car wheel pass through between the switch and the rail without throwing the pivot 15 beyond a line drawn between the center of the pivot 12 and the projection 23. Hence, it is seen that the flange of the car wheel can pass between the switch-tongue and the rail, throwing the switch over against the tension of the spring without changing the adjustment of the spring-locking device. Furthermore, it will be seen that the arrangement of the link 14 and the connecting parts is such that there is no movement of the members 6 and 7 until the locking-device is thrown in either direction beyond the central point of its movement.

The box 5 is designed to be oil-tight so as to be filled with a lubricating grease. The cover 28 is faced on its under side to make an oil-tight joint with a packing material 29 which is contained in a groove in the upper edge of the box 5. Likewise, the pivot 25 has fitted around it a brass ring 30 having holes in its surface, as 31, for the introduction of a spanner wrench. This ring 30 is threaded at the point 32 in the cover 28 and fits tightly around the periphery of the pivot 25 and is designed to take in a flexible packing. This is so that the oil will not work up around the pivot 25, and likewise is designed to exclude any dust that may get on to the surface of the cover 28. The slot 26 is so made as to be open at both ends in order to easily clean it out in case mud or dirt should accumulate in it, as the lowest point in the slot 26 can be reached from both ends.

The form, proportionate size, and the location of the various parts may be changed

or varied to conform to different sizes and types of switches without departing from the spirit of my invention.

What I claim is—

1. The combination in a spring-locking switch structure, of a tongue; a connecting rod engaging the tongue; a rotating pivoted lever to which the connecting rod is pivoted; a rotating pivot; shoulders formed on said rotating pivot; a link mounted on said rotating pivot between said shoulders; a spring actuated rod pivoted to said link; a spring; a spring-case forming a bearing for said spring; and a bearing for one end of said spring-case in the switch structure.

2. The combination in a spring-locking switch structure, of a tongue; a connecting rod engaging said tongue; a rotary lever to which the connecting rod is pivoted; a rotating pivot upon which said lever is mounted; a bearing in the switch structure for said rotating pivot; a link rotatively mounted on said pivot, and arranged to abut against either of the shoulders on the pivoted lever; a spring actuated rod pivoted to the outer end of said link; a spring mounted on said rod and arranged to cause the link to yieldingly abut against either of said shoulders as desired; and means to rotate said link to cause the thrust of the spring to yieldingly press it against either of said shoulders on the pivoted lever as desired.

3. The combination in a spring-locking switch structure, of a tongue; an adjustable connecting rod engaging said tongue; a rotating pivoted lever having shoulders, to which said connecting rod is pivoted; a rotating pivot; shoulders on said rotating pivot; a bearing in the switch structure for said rotating pivot; a link rotatively mounted on said pivot arranged to abut against the shoulders on the pivoted lever; a spring actuated rod pivoted to the outer end of said link; the pivot for said rod having a portion extending above the end of said rod and arranged to abut against the shoulders on the rotating pivot; and a spring mounted on said rod and arranged to cause the link to yieldingly abut against either of the shoulders on the pivoted lever as desired.

4. The combination in a spring-locking switch structure, of a tongue; an adjustable connecting rod engaging said tongue; a rotating pivoted lever to which said connecting rod is pivoted; shoulders formed on said lever; a rotating pivot; shoulders on said rotating pivot; a bearing in the switch structure for said rotating pivot; a link rotatively mounted on said pivot arranged to abut against the shoulders on the pivoted lever; a spring actuated rod pivoted to the outer end of said link; a pivot having a portion extending beyond the end of said rod and arranged to abut against the shoulders on the rotating pivot; a spring mounted on

said rod and arranged to cause the link to yieldingly abut against either of the shoulders on the pivoted lever as desired; and means for increasing or decreasing the tension on the spring.

5 5. In a spring-locking switch structure having a movable switch-tongue; a connecting rod engaging the tongue; a rotating pivoted lever to which the connecting rod is
10 pivoted; shoulders formed on said rotated pivoted lever having a space between them; a rotating pivot for said pivoting lever; a spring-actuated link mounted on said rotating
15 pivot and arranged to be rotated through a limited space without causing rotation of the pivoted lever; and means for imparting a rotating movement to said link.

6. In a spring-locking switch structure, a switch-tongue; a connecting rod engaging

said switch-tongue; a rotating lever having
20 a notch in its periphery to which said connecting rod is pivoted; a spring actuated locking device made narrower than the notch in the rotating lever and arranged to
25 coöperate with the walls of said rotating lever to lock the switch in either of its operative positions, the whole being arranged so as to permit a partial rotative movement of the spring actuated locking device inde-
30 pendently of the rotating lever.

In testimony whereof, I have hereunto set my hand, in the presence of two subscribing witnesses, this the 22 day of June, A. D. 1911.

FRANK H. ELLIS.

Witnesses:

R. P. ELLIOTT,
H. M. KELSO.

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