

No. 698,965.

Patented Apr. 29, 1902.

W. KINGSLAND.

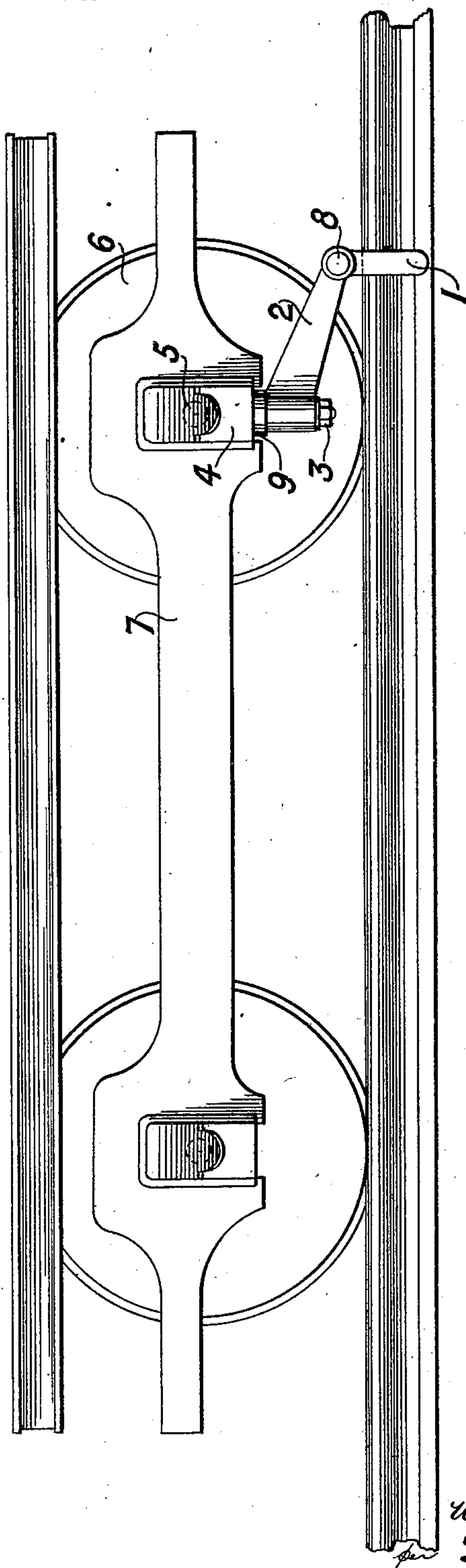
CONNECTION OF STRIKERS TO MOTOR VEHICLES FOR MECHANICALLY OPERATING
ELECTRIC SWITCHES.

(Application filed Aug. 28, 1901.)

(No Model.)

3 Sheets—Sheet 1.

—Fig. 1.—



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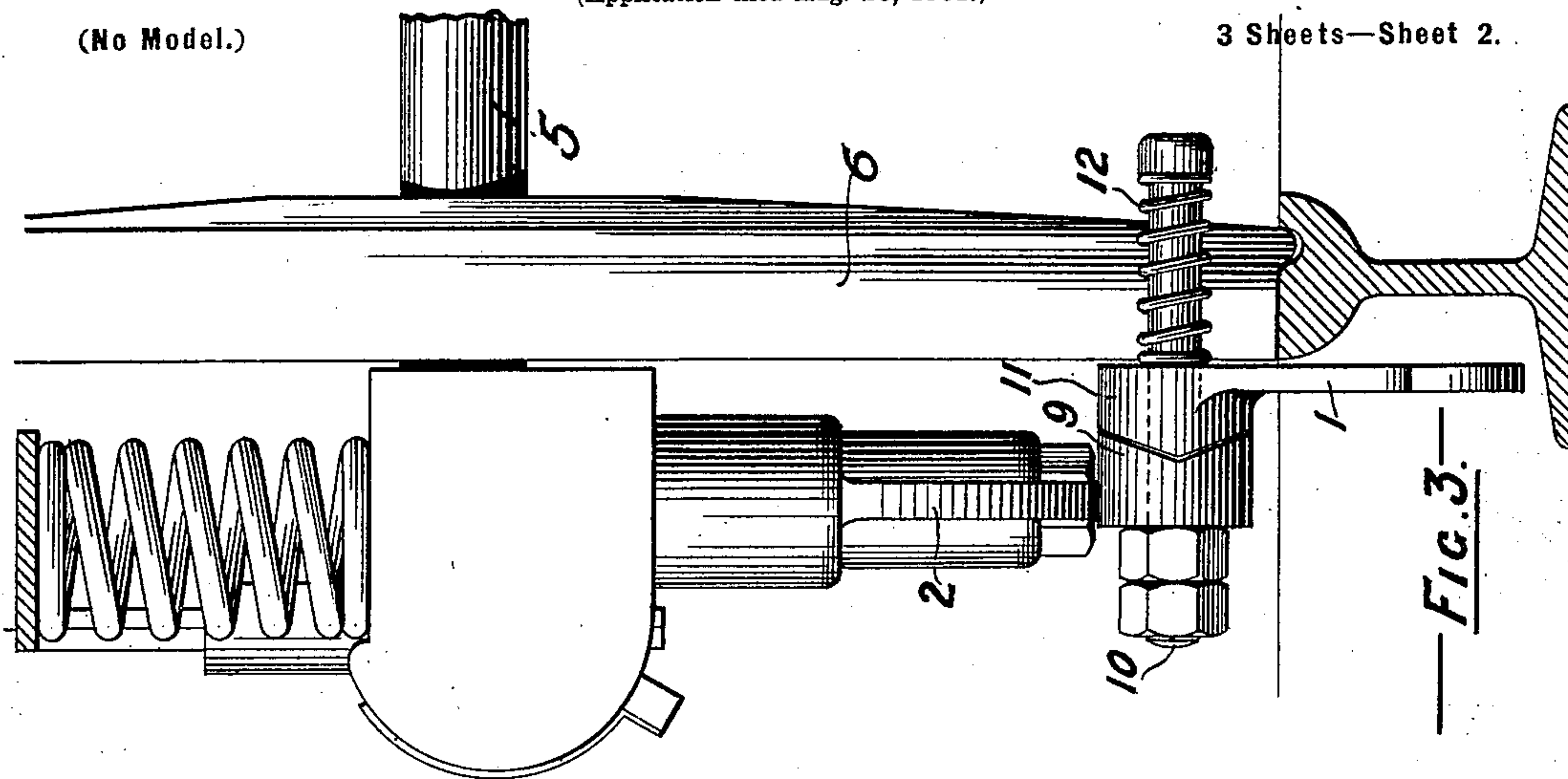


FIG. 3.

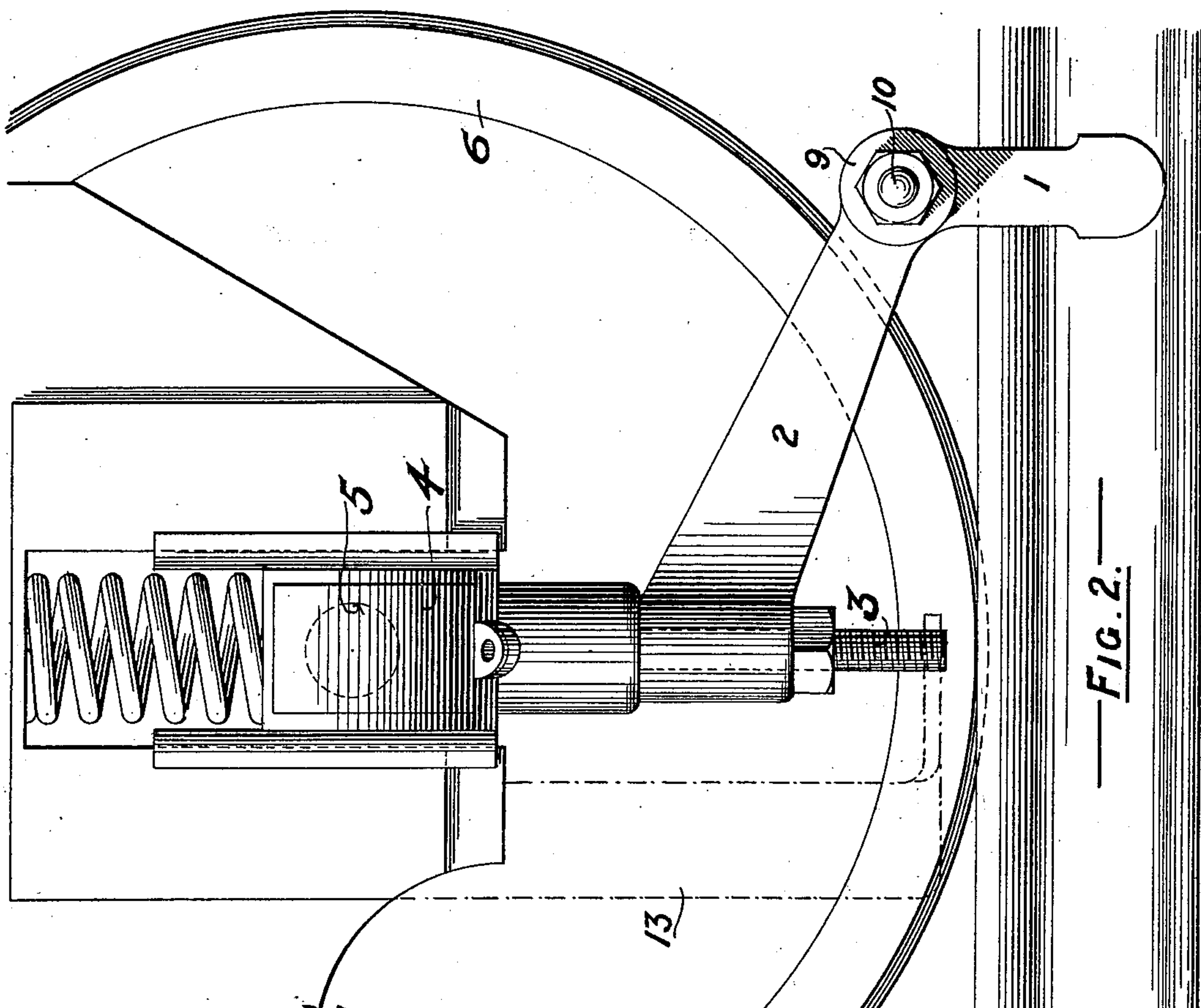


FIG. 2.

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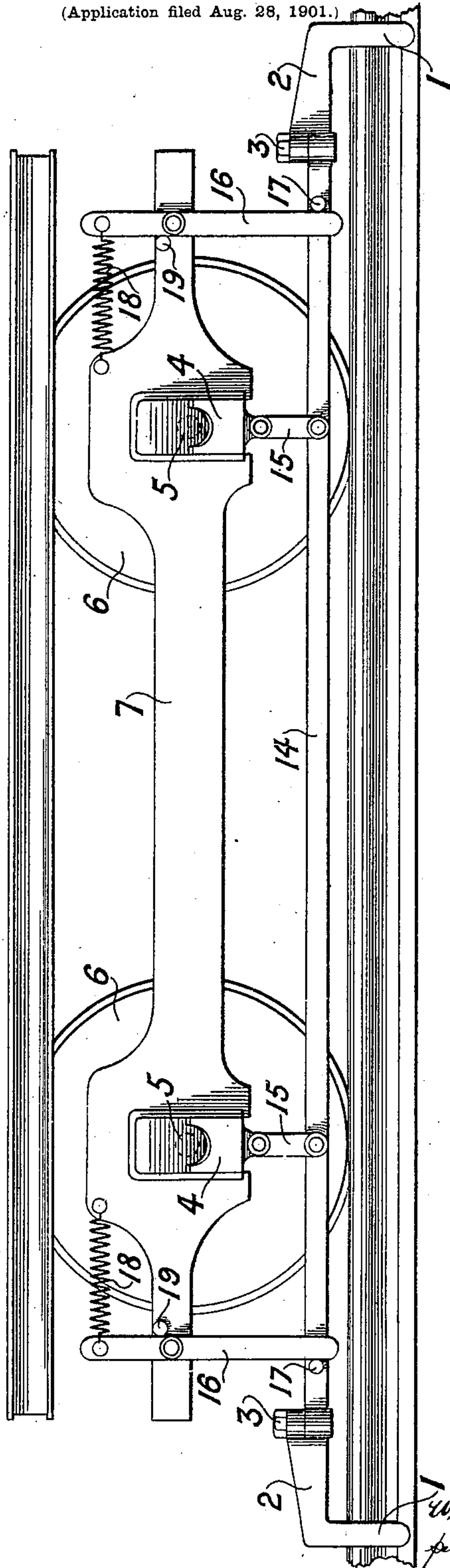
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FIG. 4.



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WILLIAM KINGSLAND, OF LONDON, ENGLAND.

CONNECTION OF STRIKERS TO MOTOR-VEHICLES FOR MECHANICALLY OPERATING ELECTRIC SWITCHES.

SPECIFICATION forming part of Letters Patent No. 698,965, dated April 29, 1902.

Application filed August 28, 1901. Serial No. 73,548. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM KINGSLAND, electrical engineer, a subject of the King of Great Britain, residing at 8 Breems Buildings, Chancery Lane, in the city of London, England, have invented a certain new and useful Improved Connection of Strikers to Motor-Vehicles for Mechanically Operating Electric Switches, (for which I have made application for patent in Great Britain, dated February 18, 1901, No. 3,487,) of which the following is a specification.

In the specification of a United States Patent granted to myself, No. 663,233, dated December 4, 1900, I have described electrically-driven motor-vehicles running upon rails as being provided with depending bars, which I termed "strikers," the office of these strikers being to mechanically operate electric switches for opening and closing electric circuits as the vehicles pass along the line of rails.

In the aforesaid specification I described means whereby the strikers are maintained in a constant relative position to the rails and are not affected by the rise and fall of the motor-vehicles, while I also show means for elastically maintaining the acting end of a striker in a working position in the direction of its action.

My aforesaid specification further deals with means by which the position of the striker relatively to the rails is also unaffected by its passage around a curve, and this result I attained by providing an auxiliary wheel running upon the rail to carry the striker, the axle of which wheel is capable of lateral motion in its bearings.

Now my present invention refers to improvements in means by which the strikers are carried, and by these improved means, hereinafter described and claimed, I am enabled to always maintain the striker in a practically constant position relative to the rails in a vertical direction, to permit of the free travel of the striker around curves of any radius in the track, while maintaining the plane of the striker more nearly parallel to the side of the rail when passing around such curves, and, moreover, I am also enabled by these improved means to very conveniently arrange the striker at any required distance in front of or behind the wheel-base of the

vehicle, and I effect all these results without the employment of an additional or auxiliary wheel, as described in my previous patent specification before referred to.

I may also with my present invention provide an elastically-operating means for maintaining the acting end of the striker in a working position in the direction of its motion, and I have hereinafter shown and claimed this elastically compensating means in combination.

My present invention therefore consists in the combinations and arrangements of parts hereinafter described and claimed.

With reference to the accompanying drawings, Figure 1 shows in side elevation so much of an electrically-driven car running upon rails as is necessary to illustrate the application thereto of a striker mounted according to my present invention, Fig. 2 being a detail view, upon a larger scale, in side elevation, and Fig. 3 in end elevation, of a striker mounted in the same or a similar manner to that shown at Fig. 1, these views more particularly illustrating a device for elastically maintaining the striker in a working position. Fig. 4 is a side elevation of my resiliently-carried strikers of a slightly-varied construction.

According to my present invention I mount or form the striker (which extends downward to act by a tappet action upon the switch) at the free end of a horizontal arm, the opposite end of the latter being carried upon a vertical pivot-pin, which is supported from the axle-box of the vehicle-wheel axle, and in combination I further provide means for elastically maintaining the acting end of the striker in a working position in the direction of its action.

At Figs. 1, 2, and 3 I have shown a simple form of my present improved means for carrying the striker, where 1 is the striker, 2 is the horizontally-swinging arm, at one end of which the striker is carried, and 3 is the vertical pivot-pin upon which the end of the arm 2 opposite the striker is mounted and upon which it is free to turn. This pivot-pin 3 is carried from, and in this instance directly connected to and dependent from, the axle-box 4, which carries the axle 5 of the track-wheel 6. 7 is the truck-frame of the vehicle.

In this construction, Fig. 1, I joint the dependent striker 1 to the arm 2 by a joint 8, and I so form this joint as to provide the means, as aforesaid, whereby the acting end of the striker is elastically maintained in a working position in the direction of its action. The construction of such a joint is shown in detail at Figs. 2 and 3, where, as will be readily seen, the end of the arm 2 is formed with a boss 9, the rear face of which is formed by inclined planes meeting about centrally of the boss, and centrally through this boss 9 there passes horizontally the pivot-pin 10. Upon this pivot-pin 10 is freely mounted the striker 1, the boss 11 of which is in face contact with the inclined surface of the boss 9 and is of opposite formation, so that the projecting inclined surfaces of the boss 11 engage with the recessed inclined surfaces of the boss 9, and the boss 11 is so held and maintained normally by a spring 12, carried upon an extension of the pivot-pin 10. When thus held, the striker extends downwardly and is carried in a vertical position.

If desired, the lower end of the pivot-pin 3, extending from the axle-box 4 of the wheel-axle 5, may be steadied and further supported at its lower end by an arm 13, (indicated by dotted lines at Fig. 2 of the drawings,) this arm extending from the frame 7 of the vehicle. This arm is formed with an aperture, through which the lower end of the pivot-pin 3 passes and in which it is supported laterally, while being free to have vertical motion due to the rise and fall of the frame 7. By this arrangement the lower end of the striker 1 is always maintained at an equal vertical distance relatively to the top of the rail. The blow of the tappet action is elastically received by a slight motion of the striker 1 about the horizontal pivot-pin 10, the striker being immediately returned to its normal vertical position by the spring 12 and the coaction of the inclined surfaces upon the bosses 9 and 11. At the same time the arm 2, carrying the striker, is free to swing in a horizontal direction and permits of the striker being trailed at any required distance behind or carried at any required distance in front of the base of the wheels, according to the length given to the arm 2.

By a modified construction of my invention I may carry the arm 2 in a more indirect manner from the axle-boxes of the wheel-axes, and I may arrange the means for elastically maintaining the ends of the strikers in a working position in the direction of their action independently of a joint or pivot between the striker 1 and the arm 2, and I have shown an example of such a construction at Fig. 4 of the drawings. Referring to Fig. 4, the striker 1 is formed with or fixed rigidly to an arm 2, and the end of this arm 2 is freely mounted upon the vertical pivot-pin 3. In this case, however, the vertical pivot-pin 3 is carried by a bar 14, which extends horizontally and lengthwise of the car, passing be-

neath the axle-box of the wheel-axes. The bar 14 is supported by pivoted links 15, the upper ends of the links being pivoted to the axle-box 4 and the lower ends of the links to the bar 14.

I have shown a striker and its arm fitted in the way described at each end of the swinging horizontal bar 14 to adapt it in electrical traction to act where a switch is to be operated upon twice during the passage of the car. It will now be seen that the immediate impact of the blow of the striker upon the tappet or other mechanism will be allowed for by a swinging motion of the bar 14 upon its supporting-links 15, and in order to limit this motion I provide springs connecting the bar 14 with the frame of the vehicle. To this end and as shown at Fig. 4, I arrange two spring-controlling devices, one to act upon each end of the bar 14, and inasmuch as these devices are alike in character I will describe the device at one end thereof. Upon the frame of the vehicle I pivot a lever 16, the lower arm of which acts against a fixed pin 17 on the bar 14, while the upper end of the lever 16 is connected by a spring 18 with the frame of the vehicle and is prevented from movement in the direction of the pull of the spring by a pin 19, carried by the frame. By this arrangement of duplicate spring-retained levers when the striker at one end of the vehicle operates upon the tappet or other mechanism one of the spring-retaining devices will act as an elastic resistance to control the swinging motion of the striker 1, and when the opposite striker acts the other elastic retaining device will be brought into operation with the same object, while the first-mentioned elastic retaining device will be inoperative.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a device for operating electric switches, the combination with a practically horizontal member having a downwardly-extending striking-arm at one end thereof to act upon the tappet mechanism, of a vertical pivot-pin upon which the other end of the horizontal member is freely mounted, and means for connecting the said pivot-pin to the axle-box of the car-wheel axle, substantially as set forth.

2. In a device for operating electric switches, the combination with a downwardly-extending striker to act upon the tappet mechanism, of a practically horizontal arm upon one end of which the striker is carried, and a vertical pivot-pin supported from the axle-box of the car-wheel axle, upon which pivot-pin the other end of the horizontal arm is mounted so that the said arm is free to turn in a horizontal plane, and whereby the striker can freely follow the curves of the track-rails, substantially as set forth.

3. In a device for operating electric switches, the combination with a downwardly-extending striker to act upon the tappet mechanism,

of a practically horizontal arm upon one end of which the striker is carried, a vertical pivot-pin supported from the axle-box of the car-wheel axle, upon which vertical pivot-pin the
5 other end of the horizontal arm is mounted, so that the said arm is free to turn in a horizontal plane, whereby the striker can freely follow the curves of the track-rail, and means for elastically maintaining the acting end of
10 the striker in a working position in the direction of its action substantially as set forth.

4. In a device for operating electric switches, the combination with a downwardly-extending
15 striker, to act upon the tappet mechanism, of a practically horizontal arm upon one end of which the striker is carried, a frame

connected to the motor-vehicle, vertical guides in the frame and sliding axle-boxes in the guides to carry the wheel-axle, so that the frame may move vertically upon the axle-
20 boxes, a vertical pivot-pin supported from the axle-box of the car-wheel axle, upon which pivot-pin the striker-carrying arm is mounted so that the said arm is free to turn in a horizontal plane, and means for elastically main-
25 taining the acting end of the striker in a working position in the direction of its action substantially as set forth.

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