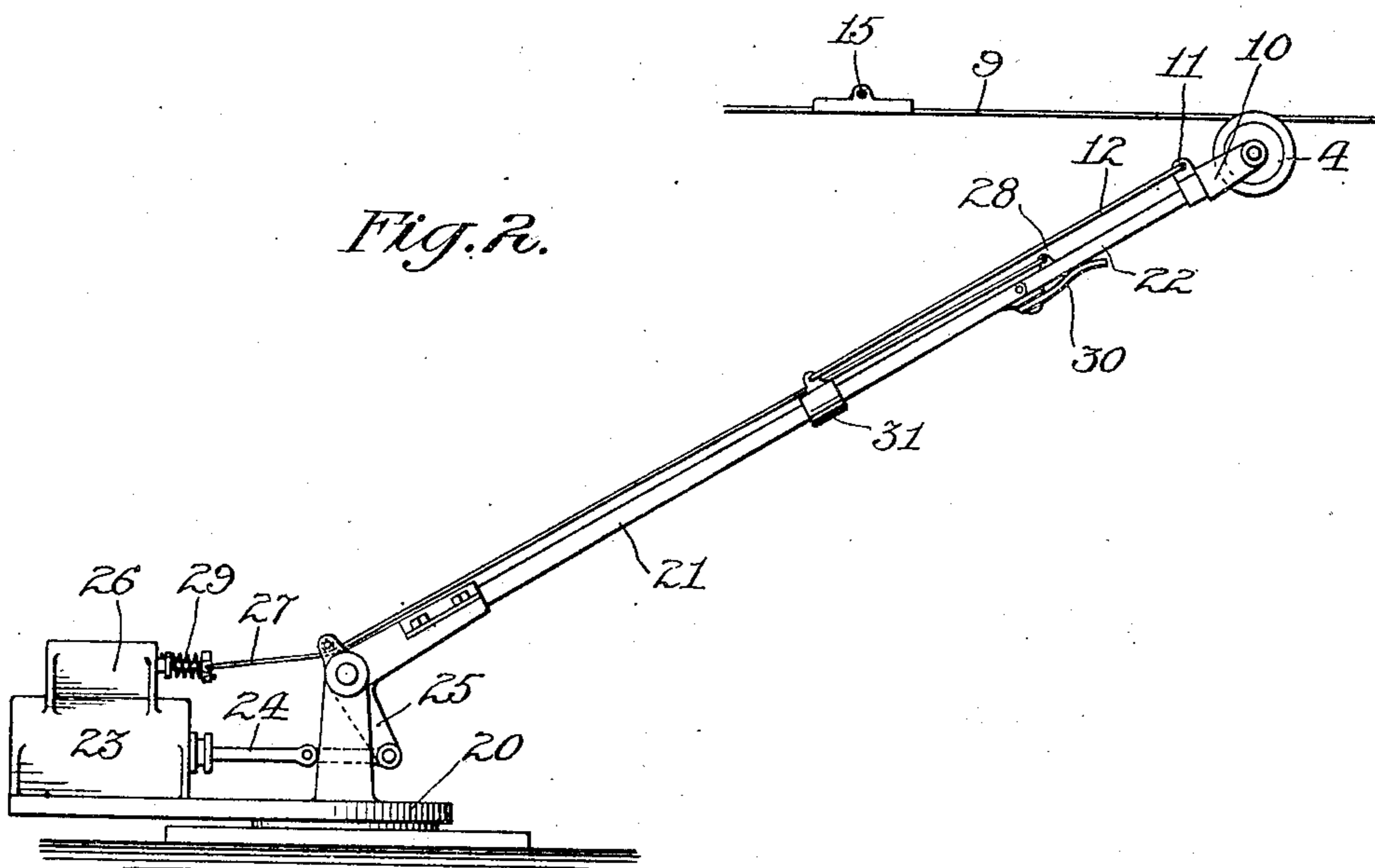
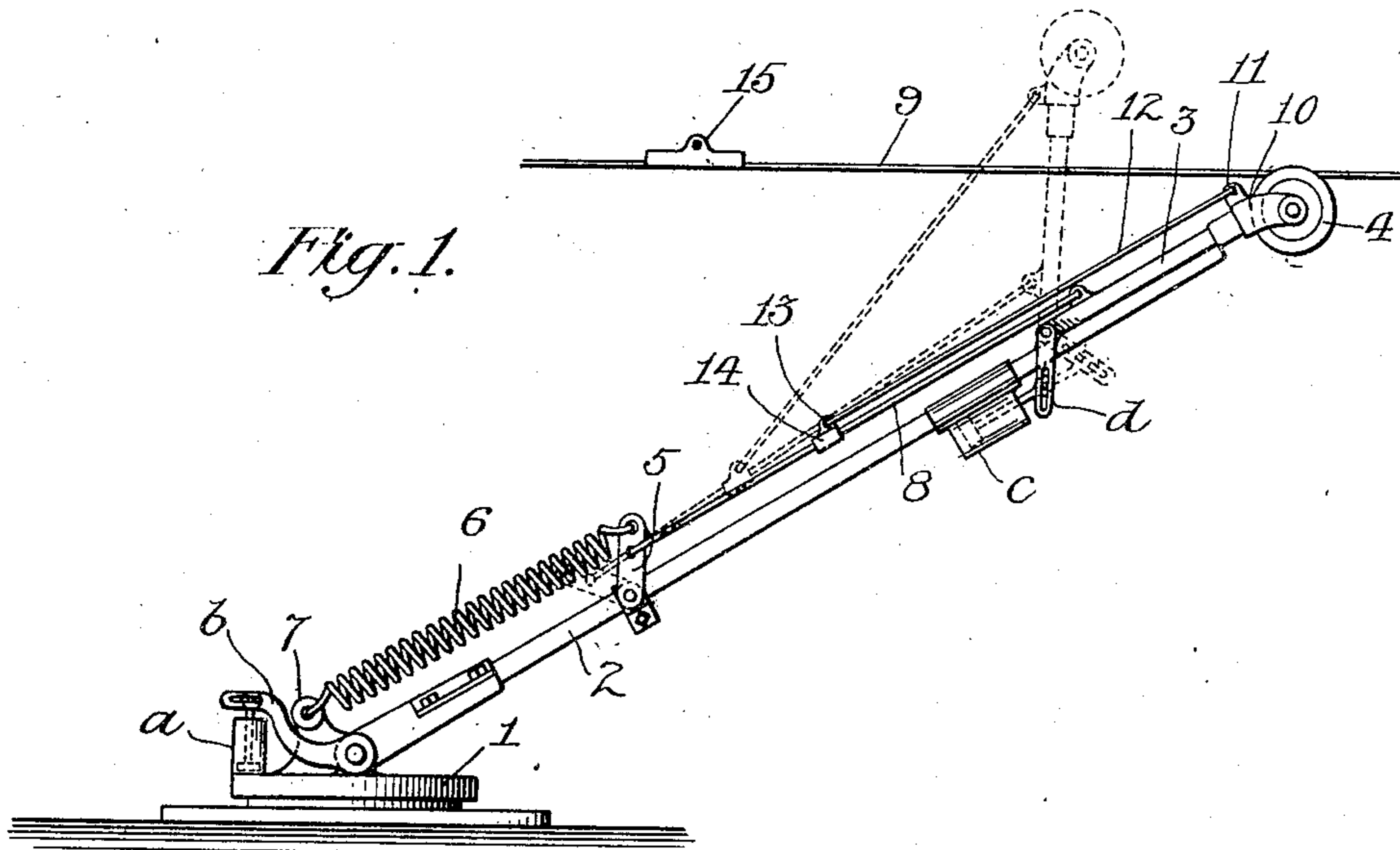


No. 832,544.

PATENTED OCT. 2, 1906.

J. R. FRENCH.
AUTOMATIC TROLLEY GUARD.
APPLICATION FILED NOV. 15, 1905.



Witnesses:-
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UNITED STATES PATENT OFFICE.

JOHN R. FRENCH, OF LOS ANGELES, CALIFORNIA.

AUTOMATIC TROLLEY-GUARD.

No. 832,544.

Specification of Letters Patent.

Patented Oct. 2, 1906.

Application filed November 15, 1905. Serial No. 287,386.

To all whom it may concern:

Be it known that I, JOHN R. FRENCH, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles, State of California, have invented a new and useful Automatic Trolley-Guard, of which the following is a specification.

This invention relates to a trolley guard or fender adapted for that type of trolley-pole in which the trolley is bodily movable relatively to the pole—for example, a pole having a pivoted arm or flexible extension which carries the trolley-wheel. Such types of trolley-poles are employed with devices for automatically lowering the trolley-pole when the pole flies from the wire, the mechanism for accomplishing this purpose being controlled by the movement made by the movement of the arm carrying the trolley relatively to the trolley-pole. In such devices this arm flies up when the trolley jumps from the wire and assumes a vertical or angular upright position, and if the car is moving very swiftly when the trolley leaves the wire and is very close to a span-wire the short arm, which quickly assumes an upright position, is very apt to strike against the span-wire unless, of course, the trolley-pole drops quickly enough to lower it below the span-wire; and the main object of the present invention is to provide means which will adjust itself automatically to the position of the trolley-carrying arm and which will in the emergencies referred to strike against the span-wire or other overhead structure and depress the trolley, so that the pole will pass safely along under the span-wire.

This invention is applicable to the structure shown, described, and claimed in a former application of mine filed March 3, 1905, Serial No. 248,194, and is also applicable to automatic trolley-poles of the pneumatic and other types.

The accompanying drawings illustrate the invention.

Referring to the drawings, Figure 1 is a side elevation showing the invention applied to a trolley-pole of the type illustrated in the application referred to, the dotted lines showing the position of the parts when the trolley-carrier has assumed an upright position. Fig. 2 shows the invention applied to a trolley-pole of the pneumatic type.

Referring to Fig. 1, 1 designates a revoluble standard to which is pivoted a trolley-

pole 2, at the upper end of which is pivoted a trolley-carrier 3, having a trolley-wheel 4. A short lever 5 is pivoted at an intermediate point on the trolley-pole 2 and is connected to the supporting-spring 6, the other end of the spring 6 being connected to a bracket 7, projecting up from the standard 1. A rod 8 connects the trolley-carrier 3 with the lever 5. When the trolley-carrier 3 lies close against the pole, as shown in full lines, the spring 6 is maintained under a tension which holds the trolley-wheel against the trolley-wire 9, while when the trolley-wheel 4 flies off from the wire 9 the lever 5 is allowed to swing freely into the position shown in dotted lines. The spring 6 is thus allowed to contract, which throws the trolley-carrier 3 into the position shown in dotted lines, and the trolley-pole 2 then drops as the supporting power of the spring 6 is nullified.

As the foregoing construction and operation are fully described in detail in the former application referred to, further description thereof is unnecessary in this case.

The trolley-harp 10 has a lug 11, to which one end of a guard-rod 12 is flexibly connected, the other end of the guard-rod 12 being flexibly connected to a lug 13, which projects from a collar or block 14, slidably mounted on the rod 8. When the trolley-carrier lies flat against the pole, as shown in full lines, the guard-rod 12 lies substantially parallel with the pole, while when the trolley-carrier assumes its upright position the guard-rod 12 is swung up into an angular position with respect to the trolley-carrier, the collar 14 being freely slidable on the rod 8 to permit of this movement, so that if the pole 2 and attached parts do not drop quickly enough to allow the trolley to pass freely under the span-wire 15 the guard-rod 12 will strike the span-wire, and owing to the inclination of the guard-rod the shock against the span-wire and trolley-pole is comparatively little, and as the guard-rod 12 runs along underneath the span-wire 15 it presses down the trolley-pole, this guard 12 being extended forward at an inclination as the carrier 3 rises, so as to always bridge the gap or angle between the carrier and pole and to fend the span-wire away from said parts at said angle. It is obvious that with a swiftly-moving car the parts will strike against the span-wire before the pole starts to drop if close to the span-wire when the trolley-carrier flies up, owing to the inertia of the pole, and for the

further reason that the pole must necessarily move down some little distance in order to lower the upright trolley-carrier and trolley to a point such that they will escape the span-wire. It is obvious that the guard-rod 12 automatically accommodates itself to the position of the trolley-carrier, and even though the trolley-carrier should assume an extreme position forward, so as to form an acute angle between the trolley-carrier and trolley-pole, the guard-rod will still be extended in a forwardly-inclined direction or angular position with respect to the span-wire, so that it bridges across the angle or gap between the pole and trolley-carrier and fends the parts guarded thereby. In order to cushion the downward drop of the pole, a dash-pot *a* is mounted on the standard 1, the piston of which is connected with a slotted arm *b*, rigidly mounted on the pole 2. In order to cushion the upward movement of the trolley-carrier, a dash-pot *c* is mounted on the pole 2, the piston of which is connected with a slotted extension *d*, which extends below the trolley-carrier.

Fig. 2 shows a trolley-controller of the pneumatic type, in which 20 designates a revoluble standard, to which is pivoted the trolley-pole 21, having at its upper end the pivoted trolley-carrier 22. An air-cylinder 23 is mounted on the standard 20, while a piston-rod 24 is connected with an arm 25, projecting down from the trolley-pole. Suitable valve mechanism in the valve-chest 26 governs the movements of the piston in the cylinder 23, and this valve mechanism is controlled by a cable or wire 27, which is fastened to a lug 28 on the trolley-carrier 22. A spring 29 serves to normally hold the valve mechanism in one position, and when the trolley flies from the wire the trolley-carrier is swung up by the contraction of a spring 30, which slackens the wire 27, and the spring 29 then contracts and shifts the valve mechanism in the valve-box 26, so that the piston in the cylinder 23 then moves toward the front end of the cylinder and pulls down the trolley-pole. In this type of trolley-pole the rod 12 is fastened to a block 31, which is slidably mounted on the trolley-pole 21 and which operates in a manner similar to that described in the previous type, the guard-rod assuming its angular position and fending the trolley-carrier from the span-wire 15.

What I claim is—

1. In combination, a trolley-pole, a trolley-carrier pivoted to the pole and normally substantially in line therewith, a fender-rod, and means for moving the fender-rod into angu-

larity with the trolley-carrier when the trolley-carrier swings into angularity with the pole.

2. In combination, a trolley-pole, a trolley-carrier flexibly attached to the pole, means for turning the carrier upwardly on the pole, and a fending-guard connected to the carrier and to the pole and normally lying folded parallel with the pole, and means for extending it in an inclined direction across the angle between the pole and carrier as the latter turns upwardly.

3. In combination, a trolley-pole, a trolley-carrier flexibly attached to the pole, means for turning the carrier upwardly, a fending-guard flexibly connected to the carrier and normally lying folded against the pole, and a member flexibly connected to said guard and movable longitudinally of the pole to extend the guard forward at an inclination as the carrier turns upwardly.

4. A standard, a pole pivoted to the standard, a trolley-carrier pivoted to the pole, means for cushioning the movement of the trolley-carrier, a dash-pot carried by the standard, means connecting the piston of the dash-pot with the pole, and means for bridging the gap between the pole and trolley-carrier when the latter swings above the pole.

5. A standard, a pole pivoted to the standard, a trolley-carrier pivoted to the pole, means for cushioning the movement of the trolley-carrier, a dash-pot carried by the standard, means connecting the piston of the dash-pot with the pole, and a guard jointed with the trolley-carrier and movably connected with the trolley-pole.

6. A pivoted trolley-pole, means for swinging the pole vertically, a trolley-carrier pivoted to the trolley-pole and normally in line therewith, a connection from the trolley-carrier to the said means for controlling the same, and a fender-rod pivotally connected to the trolley-carrier near the trolley and normally lying parallel with the pole, and means for raising the trolley-carrier into angularity with the pole thereby operating said controlling connection when the trolley jumps from the wire and raising said fender-rod from inoperative to operative position bridging the angle formed by the pole and trolley-carrier.

In testimony whereof I have hereunto set my hand, at Los Angeles, California, this 7th day of November, 1905.

JOHN R. FRENCH.

In presence of—

GEORGE T. HACKLEY,
VERNA A. TALBERT.