

No. 709,089.

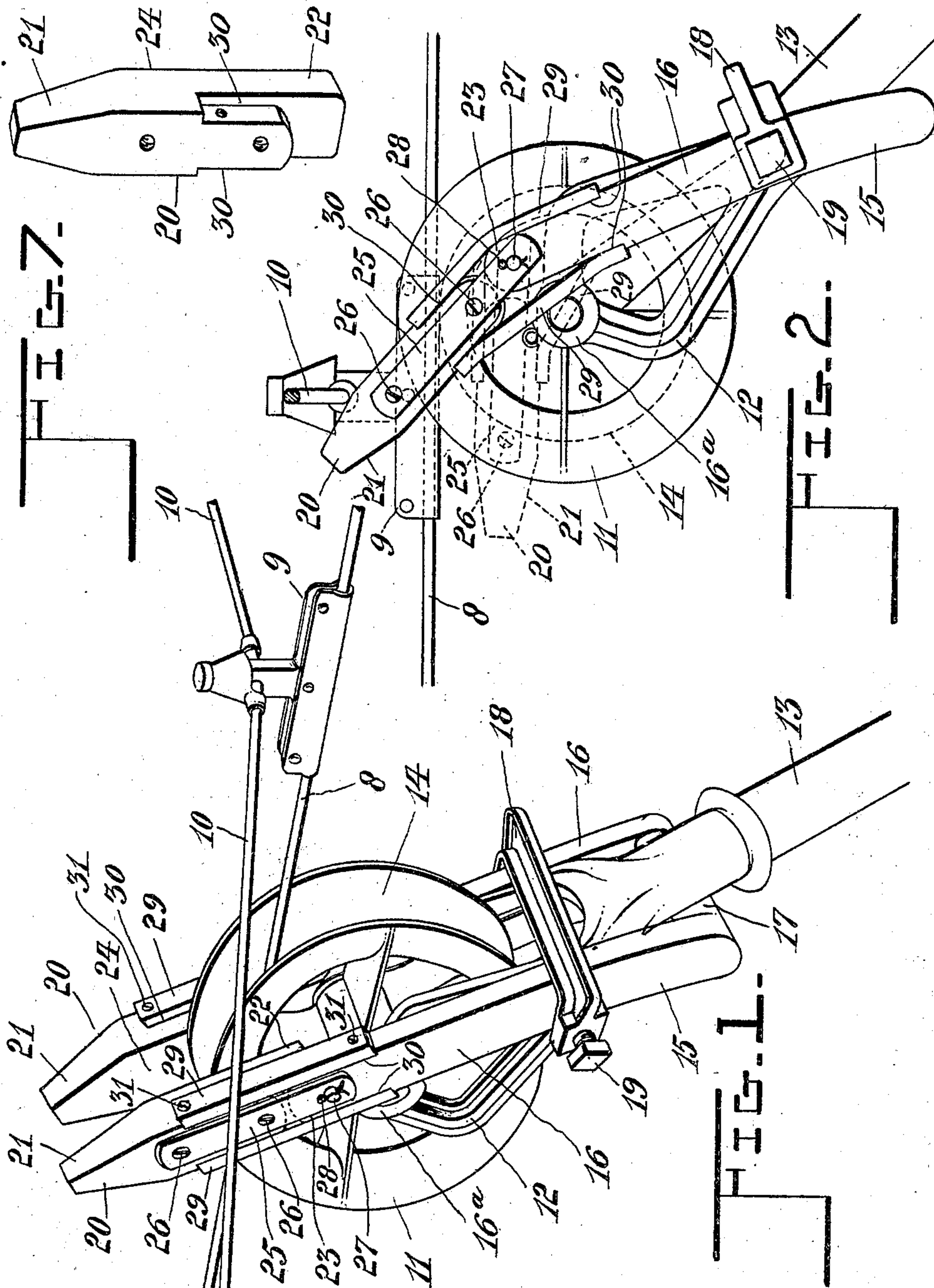
Patented Sept. 16, 1902.

E. GAGNÉ.
TROLLEY GUARD.

(Application filed Apr. 16, 1902.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses:

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Edouard Gagné, Inventor,

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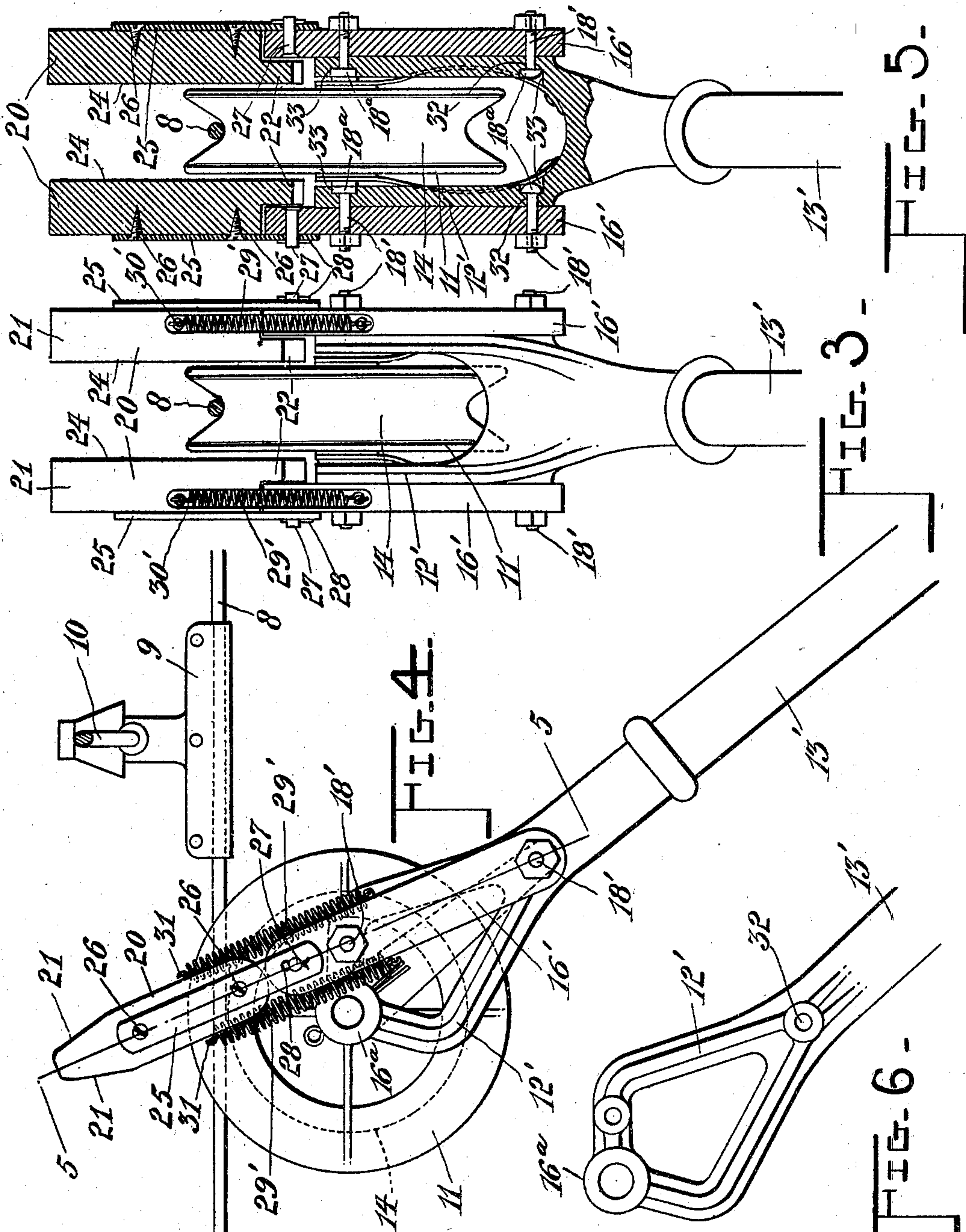
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UNITED STATES PATENT OFFICE.

EDOUARD GAGNÉ, OF POINT ST. CHARLES, CANADA, ASSIGNOR OF ONE-HALF TO PASCHAL BONNEAU, OF WILLOW BUNCH, NORTH-WEST TERRITORIES, CANADA.

TROLLEY-GUARD.

SPECIFICATION forming part of Letters Patent No. 709,089, dated September 16, 1902.

Application filed April 16, 1902. Serial No. 103,243. (No model.)

To all whom it may concern:

Be it known that I, EDOUARD GAGNÉ, a subject of the King of Great Britain, residing at Point St. Charles, county of Hochelaga, Province of Quebec, Canada, have invented certain new and useful Improvements in Trolley-Guards; and I do hereby declare that the following is a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to a guard device especially adapted for attachment to the under-running trolleys of electric-railway cars for overhead service, my device being adapted to form a guard of sufficient dimensions to absolutely prevent the trolley from slipping off the wire, as very frequently happens with those trolleys which are now in use.

The reason for the frequent slipping off of trolleys lies particularly in the fact that the only means for retaining the trolley upon the wire consists in the groove in the trolley-wheel itself. Now in general this groove has oblique sides, so that any lateral pressure upon the trolley-wheel as may be caused by a certain stiffness of the swivel-joint at the base of the pole will cause a resultant downward pressure upon the trolley-wheel, owing to the obliqueness of the groove therein, whereby the trolley is caused to be depressed and to slip off the wire, and this particularly happens in turning curves and at other points where there is a sudden turn in the car, followed by a consequent lateral jerk upon the trolley-pole, which causes it to spring sideways. Another reason for the frequent slipping of the trolley from the wire is that even if the sides of the groove in the trolley-wheel be straight the fact that it is a wheel and that the wire passes out of said groove gradually at each side thereof causes a resultant downward frictional pressure upon the wheel, tending to throw the wire out of the groove thereof in case the wire and wheel are not precisely in line, and therefore whenever there is an abrupt angle in the wire, as is always the case to some extent on curves and switches, the trolley-wheel being oblique to the wire is pushed off by a frictional contact

of the sides of the groove therewith. With these causes and effects in mind it is my object in the present invention to provide means independent of the trolley-wheel for preserving the latter on the wire and absolutely preventing its accidental displacement therefrom, no matter what angles and curves the trolley-wheel may meet with and no matter what lateral strains the trolley-pole may be subjected to.

It is my further object in this invention to provide a device which while fulfilling this invention shall not interfere in any way with the span-wires, switches, or hangers, but shall radially yield to these, while at the same time preserving the trolley-wheel itself against being pushed off the wire.

It is a further object of my invention to provide an adjustable trolley-guide which may be equally applied to any trolley without any alteration thereof and adjustably clamped thereto in position or, on the other hand, may be removed and replaced by a substitute attachment, as may be desired.

To these ends my invention consists substantially in a forked piece having two upwardly-extending arms adapted to embrace the respective sides of the trolley-wheel, and on the upper ends of each of these arms is hinged an extension thereof, which extends beyond the upper rim of the trolley-wheel to a sufficient height to catch the trolley-wire in case it should jump out of the groove of the trolley-wheel and guide it back into the groove again. These extensions on the two arms of the attachment are, moreover, resiliently held in line with the said arms, so as to project normally in the position stated; but whenever the trolley passes under a span-wire or switch they are adapted to be depressed sideways, so as to easily clear the same, this bending of the extensions being adapted to take place in either direction, according to the direction of movement of the car or trolley, and after clearing the said span-wire or switch they will spring back again into their original positions, this effect being caused to take place by means of suitable elastic pieces attached thereto, as will be seen.

My invention furthermore consists in the

particular construction and combination of parts hereinafter described, and more particularly set forth in the claims.

I have illustrated two forms of my invention in the accompanying drawings, wherein—

Figure 1 is a perspective view of a preferred form of the invention, shown as in position on a trolley moving on a trolley-wire.

Fig. 2 is a side elevation of the same, showing the device in the operation of passing a span-wire. Fig. 3 is a front elevation of a modified form of the invention. Fig. 4 is a side elevation of the same. Fig. 5 is a sectional elevation taken on the line 5 5 of Fig. 4. Fig. 6 is a side elevation of the trolley-pole end provided with that modification of my invention shown in Figs. 3, 4, and 5. Fig. 7 is a perspective view of the pivoted guard extension.

In the drawings, 8 represents a trolley-wire supported by a hanger 9 by means of transverse span-wires 10, and on this wire runs a trolley-wheel 11, which is attached to the forked end 12 of a trolley-pole 13, the wire running in the groove 14 of the wheel 11. These parts may be of any type in common use, constituting no part of my invention.

The attachment constituting my invention comprises a three-sided or U-shaped bar 15, having a pair of upwardly-extending limbs 16, which extend, as shown, upwardly in an oblique direction to a point slightly above the upper side of the bearing-boss 16^a of the trolley-wheel and are connected at their lower ends by a transverse member 17, which passes around the lower side of the trolley-pole 13 and is adapted to rest upon the latter, while the upper ends of the limbs 16 rest against the upper side of the boss 16^a, and in this position the piece 15 is adapted to be secured by any suitable device—as, for instance, by a three-sided screw-clamp 18, passing around one side of the trolley-pole and securely attaching the piece 15 to the forked end 12 of the trolley-pole by means of a screw 19.

At the upper end of each limb 16 of the U-shaped piece 15 is pivotally attached an extension 20 of the limb, which may be appropriately tapered, as at 21, at its top end and is cut away at its lower end to form a tongue 22, which overlaps the upper end 23 of the member 16, as shown in Fig. 5, thus bringing the inner side 24 of the extension 20 close to the edge of the trolley-wheel 11. On the outer side of the extension 20 is attached a metal strap 25 by means of screws or other fastenings 26, and this strap extends beyond the lower end of the extension 20 and is pivoted to the end 23 of the limb 16 by means of a pivot-pin 27 and a linchpin 28. The extension 20 is thereby enabled to have a free pivotal motion about the pin 27, and it is normally held in an axial line with the limb 16 by means of a pair of springs 29, which are arranged to lie in grooves 30 in the edges of the members 16 and 20 on each side thereof

and are attached thereto by means of suitable fastenings 31. The springs 29 are preferably made of a thick strip or bar of rubber, which in the normal position, Fig. 1, of the extension is relaxed or not subject to tension, but becomes stretched when the extensions 20 are bent over, as in Fig. 2. The arrangement is such that both of the extensions 20 on the opposite sides of the trolley-wheel are resiliently held in the position shown in Fig. 1, but may be bent in either direction—that is to say, forward or back—and when released will again return to their normal position; but the pivotal mounting of the extensions 20 does not enable them to turn laterally—that is to say, at right angles to the plane of the trolley-wheel. When, therefore, the trolley is rolling on the wire, if any accident should happen to disturb its connection therewith or to push it downwardly or sideways the wire will strike against one of the extensions 20, which project above the wheel, as shown in Fig. 1, and hence will be kept in line with the trolley-wheel and return into the groove thereof as soon as the disturbing force is removed. When, however, this trolley-wheel is passing under the span-wire 10, the extensions 20 will strike against the latter and will be bent downwardly, as shown in Fig. 2; in order to pass under the same, and after passing the span-wire the extensions 20 will resume their original position under the tension of the forward spring 29. When the trolley passes through a switch, the extension 20 will be bent still further downwardly into the position shown in dotted lines in Fig. 2, the pivot of the extension 20 being so arranged as to carry the extension entirely below the level of the upper edge of the trolley-wheel when necessary.

That form of the invention shown in Figs. 1 and 2 is particularly adapted for the trolley-poles at present in use where a radially detachable and removable guard is required, which may be readily clamped to an existing trolley without change thereof; but in cases where the trolleys are made for this purpose I prefer to provide a fixed attachment, as shown in Figs. 3, 4, and 5, this attachment comprising a pair of independent arms 16', corresponding to the arm 16, and these arms 16' are separately attached to the sides of the end 12' of the trolley-pole 13' by means of a pair of bolts 18', which pass through bolt-holes 32, provided at the proper points in the end 12', and have their heads 18^a countersunk, as shown at 33, in the inner face of the trolley-pole end. The pieces 16' are therefore securely clamped to the trolley-pole and form substantially a part thereof. In this modification also I have shown the rubber springs 29 as replaced by a pair of coil-springs 29', attached in the same manner and adapted to act in the same way, these springs lying in segmental grooves 30', similar to the grooves 30. (Shown in Fig. 7.) In other respects the

modified form of Figs. 3, 4, and 5 is substantially the same as that shown in the first form and acts in the same manner.

It will be observed that the extension 20 is not only adapted to give or yield to pressure from the front side in passing over spans and switches in the forward direction, but is equally well adapted to be turned forwardly by striking a span-wire or switch when the car is moving backwardly, and therefore is applicable to all conditions.

While I have shown in the accompanying drawings the preferred form of my invention, it will be understood that I do not limit myself to the precise form shown, for many of the details may be changed in form or position without affecting the operativeness or utility of my invention, and I therefore reserve the right to make such modifications as are included in the scope of the following claims.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is—

1. In an electric railway, a trolley-guard comprising a pair of bars clamped to the opposite sides of the trolley-pole end adjacent to the wheel, a pair of extensions pivotally mounted to the ends of said bars on transverse axes, said extensions extending above the rim of the trolley-wheel and being adapted to be depressed below said rim, and a pair of extensible springs secured at the front and rear sides of each of said bars and extensions and joining them, said springs being adapted to maintain said extensions longitudinally in line with said bars to project above the rim of said trolley-wheel, and to permit said extensions to be longitudinally turned about their pivots in either direction by front or rear pressure and restore them to their normal position after said pressure is removed.

2. A trolley-guard comprising a U-shaped piece adapted to be removably clamped to the trolley-pole and having a pair of upstanding limbs adapted to embrace the opposite sides of the trolley-pole end and a transverse piece joining them and adapted to rest against the underside of the trolley-pole, a pair of hinged extensions mounted on transverse pivots at the upper ends of each of said limbs and extending normally above the trolley-wheel, and a pair of elastic extensible springs joined at their ends respectively to one of the extensions and the respective limbs at the front and rear sides thereof, whereby to resiliently maintain said extensions in axial line with said limbs and to permit them to be depressed by front or rear pressure below said trolley-wheel rim.

3. In an electric railway, the combination of a trolley-pole having a forked end, a trolley-wheel rotatably mounted in said end, a

pair of bars adjustably clamped at opposite sides of said forked end, an extension pivotally mounted on the end of each bar, an extensible spring on the front side of said bar and extension and having its ends attached respectively to the bar and the extension, and a similar spring on the rear side attached in like manner whereby to retain said extension normally in axial line with said bar and to project above said trolley-wheel, substantially as described.

4. In an electric railway, the combination of a trolley-pole, a trolley-wheel rotatably carried at the end thereof, a U-shaped piece having upstanding limbs adapted to embrace the two sides of the trolley-pole end and a transverse member adapted to rest against the lower side of the pole at the base of said end, a screw-clamp overlying said pole end and U-shaped piece and radially clamping the latter in place upon the trolley-pole end, a pair of extension-pieces, a strap secured to each piece and extending beyond the lower end thereof, a transverse pivot-pin connecting each of said straps with the respective upstanding limb of said U-shaped piece, an overhanging tongue on the inner side of each of said extensions whereby to bring the inner face of said extensions into juxtaposition with the rim of the trolley-wheel, and means for resiliently retaining said extensions in upright position and permitting them to be depressed by pressure from the front or rear sides of the trolley-wheel, substantially as described.

5. In an electric railway, a trolley-guard comprising a U-shaped piece having a pair of upstanding limbs adapted to embrace the opposite sides of a trolley-pole end, a three-sided screw-clamp adapted to overlie said trolley-pole end and U-shaped piece and to securely clamp the latter to said trolley-pole end, a pair of extension-pieces surmounting the ends of the limbs of said U-shaped piece, transverse pivot-pins connecting said extensions with the respective limbs of the U-shaped piece, said extensions having each an inwardly-extending face adapted to lie in juxtaposition with the edge of the trolley-wheel rim, and a spring arranged to resiliently maintain said extensions in upright positions and to permit the same to be depressed by pressure from front or rear and to restore them to their normal position, substantially as described.

In witness whereof I have hereunto set my hand in the presence of two witnesses.

EDOUARD GAGNÉ.

Witnesses:

J. A. MARION,
T. MYNARD.