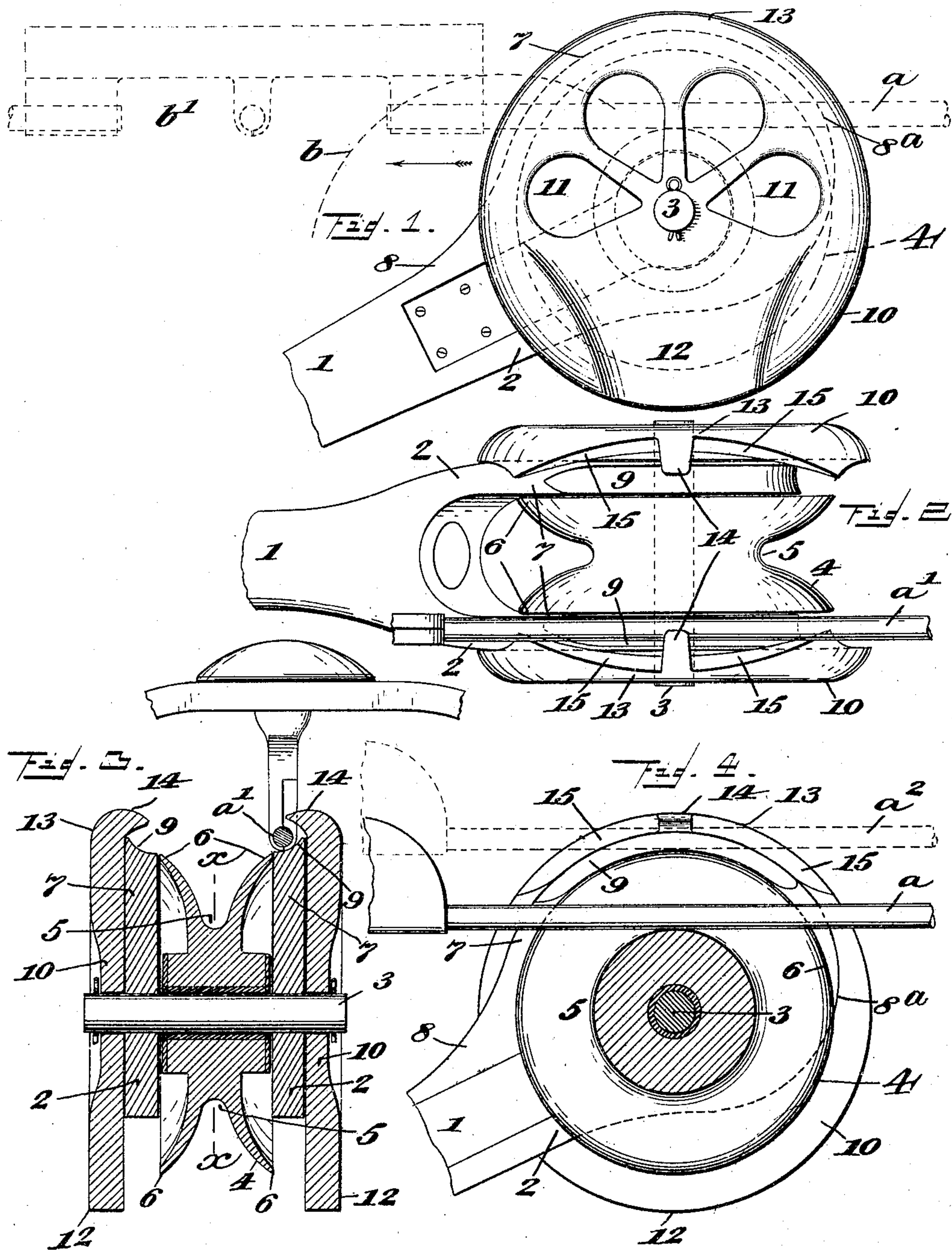


No. 780,767.

PATENTED JAN. 24, 1905.

R. R. WEEKS.
ELECTRIC RAILWAY TROLLEY.
APPLICATION FILED APR. 14, 1904.



WITNESSES:

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ELECTRIC-RAILWAY TROLLEY.

SPECIFICATION forming part of Letters Patent No. 780,767, dated January 24, 1905.

Application filed April 14, 1904. Serial No. 203,131.

To all whom it may concern:

Be it known that I, RUSSIA R. WEEKS, a citizen of the United States of America, and a resident of Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Electric-Railway Trolleys, of which the following is a specification.

This invention relates to certain improvements in electric-railway trolleys, and has for its object to provide a device of this character which shall be provided with means for preventing the trolley-wheel from being displaced from the trolley-wire, whereby the annoyances and damage commonly caused by such displacement and the time lost in replacing the trolley-wheel upon the wire are avoided.

The invention consists in part in an electric-railway trolley comprising a trolley-wheel with a grooved periphery and held to turn between the arms or forks of a harp in a well-known way, the extremities of said arms or forks having portions in the form of rounded cam extensions at opposite sides of the trolley-wheel and provided with cam-surfaces extended beyond the perimeter of said wheel in position for engagement with the trolley-wire when the wheel is laterally displaced, whereby the trolley is prevented from being displaced from the wire and said wire is returned to a position within the groove of the trolley-wheel.

The invention also contemplates certain novel features of the construction, combination, and arrangement of the several parts of the improved electric-railway trolley whereby certain important advantages are attained and the device is made simpler, cheaper, and otherwise better adapted and more convenient for use, all as will be hereinafter fully set forth.

The novel features of the invention will be carefully defined in the claims.

In the accompanying drawings, which serve to illustrate my invention, Figure 1 is a side elevation showing a trolley embodying my improvements, a trolley-wire and "cross-over" of well-known construction being shown in dotted lines in connection therewith. Fig. 2 is a plan view of the improved electric-rail-

way trolley, the trolley-wire being shown in full lines as it appears when displaced laterally from the grooved periphery of the wheel. Fig. 3 is a section taken vertically through the axis of the trolley-wheel with the parts in the position in which they are represented in Fig. 2. Fig. 4 is a sectional view taken centrally through the improved electric-railway trolley in a plane at right angles to the plane in which the section Fig. 3 is taken and as indicated by the line *xx* in said figure.

As shown in the views, 1 indicates the body portion of the harp or frame of the improved trolley, and 2 2 indicate the spaced arms or forks thereof, while 3 indicates a shaft or pin extended between said spaced arms or forks 2 2 and whereon the trolley-wheel 4 is arranged to turn in the ordinary way. Said trolley-wheel 4 has the ordinary or any desired construction, being formed with a central peripheral groove 5, wherein the trolley-wire is designed to be received normally, as indicated at *a* in Figs. 1 and 4, and at opposite sides of said central groove 5 the wheel 4 is provided with inclined surfaces 6 6, adapted to serve for guiding the trolley-wire into a central position relative to said wheel, so that said wire may be properly seated within the said groove 5.

The arms or forks 2 2 of the harp or frame of the trolley are provided upon their upper sides and at opposite sides of the trolley-wheel 4, held between them, with rounded enlargements or extensions 7 7, concentric with but of greater radius than the inclined sides 6 6 of the trolley-wheel 4, said extensions or enlargements 7 7 being extended from the body portion 1, as indicated at 8 in Figs. 1 and 4, around the periphery of the wheel for about one-half or three-fourths of the circumference thereof and terminating at 8^a, as shown in said Figs. 1 and 4, and upon the portions of said extensions which, by reason of the greater radius of the extensions, project beyond the upper peripheral portion of the trolley-wheel 4 I produce cam-surfaces 9 9, which are chamfer-grooved downward toward the groove 5 of said wheel 4 and have their lower edges substantially coincident with the inclined sides of the trolley-wheel, so as to form upward ex-

tensions of said sides, whereon the trolley-wire is adapted to be received and held, as indicated at a' in Figs. 2 and 3, when laterally displaced from the groove 5 of the trolley-wheel.

5 By means of this construction it will be apparent that in case of lateral displacement of the wire relatively to the trolley-wheel 4, whereby in ordinary constructions said wheel would be displaced or disengaged from the
10 wire and the trolley would be permitted to fly upward into a position such as would endanger the security of the span-wires and other overhead connections of the system, the said wire will be received upon and held in place
15 by the chamfer-grooved upwardly-disposed cam or riding surface 9 of the extension 7, wherewith it is engaged, and will, owing to the concaved inclination or slope of said cam-surface, be readily grasped and forced or re-
20 turned within the groove 5 of the wheel, so that damage to the span-wires, &c., overhead is altogether avoided.

In connection with my improved electric-railway trolley constructed as above described
25 it may also be desired to employ means for permitting the device to pass readily over switches, intersections, crossed wires, and "crossovers," and for such purposes I prefer to employ, in addition to the features
30 above described, devices located at opposite sides of the trolley-wheel and projecting above the periphery of the same, so as to have perimetral portions designed for engagement with the fixed parts, over which it is desired
35 to pass the trolley, so that upon the engagement of said devices with the overhead fixed portions of such crossovers, intersections, or switches the trolley-wheel will be forced down in an even and gradual manner, whereby the
40 conductor is not required, as is ordinarily the case, to hold down the trolley to prevent it from springing off the wires in passing such points in the system. For this purpose I prefer to employ on opposite sides of the
45 forked harp or frame of the trolley circular disks or rolling parts 10 10, held to turn upon the ends of the shaft or pin 3 of the trolley-wheel, which are extended beyond the forks or arms 2 2 for this purpose, said disks or
50 rolling parts 10 10 being lightened at their upper parts by means of openings 11 11, produced in them to afford a spoked construction and having at their lower parts thickened portions 12 12, by means of which said parts
55 or disks 10 are held by gravitation in their normal positions.

The disks or parts 10 10 have diameters greater than the trolley-wheel and also greater than the extensions or enlargements 7 of the
60 arms or forks 2 2 of the trolley frame or harp, whereby the upper portions of said disks or rolling parts 10 10 are caused to extend in a plane above the trolley-wheel and also above said extensions 7 7, so as to be in position to
65 engage upon the crossover or other fixed

part and to force the trolley-wheel downward and prevent it from striking upon such fixed parts, so that the trolley is prevented from being thrown from the wire.

In Fig. 1 I have shown a crossover in dotted lines at b' and have indicated in dotted lines at b the position in which the disk or part 10 stands after contact therewith and whereby the trolley is automatically lowered as it moves in the direction indicated by the
75 arrow and engages said crossover.

The disks or rolling parts 10 being free to move or turn on the extended ends of shaft or pin 3 enable the trolley to readily pass
80 over such overhead obstructions as are necessarily included in the overhead system and being provided with rounded edge surfaces 13, as indicated in Figs. 2 and 3, are not liable on contact with the overhead parts to injure the same, and in connection with said
85 parts or disks 10 I prefer also to employ additional means for preventing the wire from being displaced from the trolley, which means comprises inturned fingers or projections 14
90 14, centrally arranged at the upper parts of the disks 10 and overhanging the cam-surfaces 9 on the arm or fork extensions 7, so as to be in position to be engaged by the trolley-wire when the same is laterally displaced to the position shown at a' in Figs. 2 and 3
95 and in dotted lines at a'' in Fig. 4, whereby said wire is effectually prevented from leaving the trolley.

At opposite sides of the fingers or projections 14 14 of parts or disks 10 10 I provide
100 other inclined cam-surfaces 15 15, reversely arranged and adapted when the wire is engaged with the parts or disks 10 and serves to impart turning or rolling motion thereto to engage the said wire and press the same
105 over toward the cam-surfaces 9 of the arm or fork extensions 7 7, down which the wire is thus forced to pass and is finally seated within the groove 5 of the trolley-wheel. The weighted construction of the parts or disks 10 10 insures that the fingers 14 14 will always be in position for proper engagement over the trolley-wire when the same is laterally displaced, since after each turning or rolling movement of said parts or disks they will
110 be automatically returned to their proper initial position ready for repeated service.

From the above description of my invention it will be seen that the improved electric-railway trolley is of an extremely simple and
115 inexpensive nature and is especially well adapted for use, since it effectively prevents displacement of the trolley and avoids the annoyances and delays occasioned by constructions hitherto in use in replacing the trolley
120 on the wire, and in case the parts or disks 10 10 be employed the device permits of being readily passed over overhead obstructions without care or attention on the part of the conductor. It will also be obvious from the
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above description that the improved electric-railway trolley is capable of some modification without material departure from the principles and spirit of the invention, and for this reason I do not wish to be understood as limiting myself to the precise form and arrangement of the several parts of the device herein set forth in carrying out my invention in practice.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. An electric-railway trolley comprising a harp or frame having arms or forks, a trolley-wheel held to turn between the arms or forks of the harp or frame and provided with a grooved periphery, and upward cam extensions upon the arms or forks at opposite sides of said wheel with reversely-inclined, chamfer-grooved edge portions beginning with and extended upward beyond the perimeter of the same in position for engagement with a trolley-wire.

2. An electric-railway trolley comprising a frame, a grooved wheel held to turn thereon and parts held to turn at opposite sides of the wheel with peripheral portions extended beyond the perimeter of the wheel, each such part having its lower portion weighted and having its upper part provided with a central projection extended over toward the groove of the wheel and having at opposite sides

of said projection reversely-formed cam-surfaces.

3. An electric-railway trolley comprising a frame having forks, a wheel held to turn between the forks and having a groove, extensions on the forks at opposite sides of the wheel and provided with oppositely-inclined cam-surfaces, and disks mounted to turn at opposite sides of the forks with edge portions extended beyond the extensions thereof.

4. An electric-railway trolley comprising a frame having forks, a grooved wheel held to turn between the forks, extensions on the forks at opposite sides of the wheel and formed with reversely-inclined cam-surfaces, and disks mounted to turn at opposite sides of the forks with edge portions extended beyond the extensions thereof, each disk having a weighted lower portion and having at its upper part a central projection overhanging the cam-surface on the adjacent fork and at opposite sides of said projection, reversely-inclined cam-surfaces adapted, when the disk is turned, to force a displaced trolley-wire toward the groove of the trolley-wheel.

Signed at Cincinnati, Ohio, this 8th day of April, 1904.

RUSSIA R. WEEKS.

Witnesses:

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