(No Model.)

N. MUSLAR.

ELECTRIC TROLLEY.

No. 553,927. Patented Feb. 4, 1896.

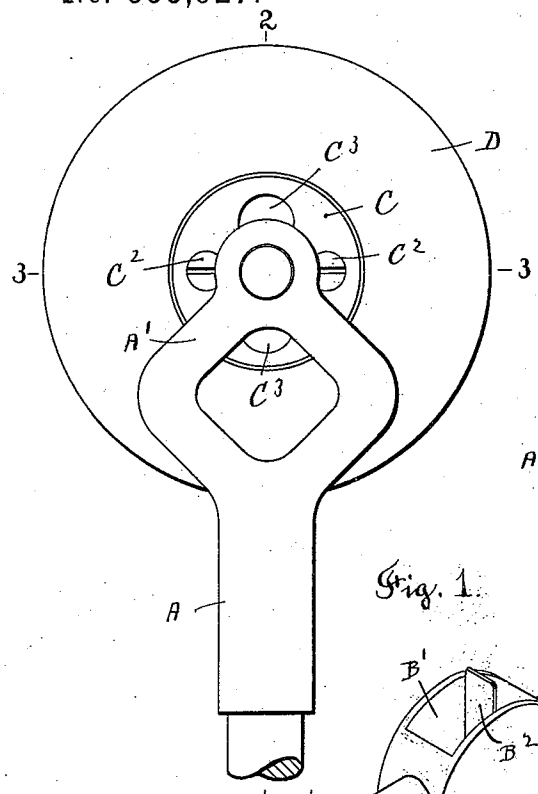

Fig. 1.

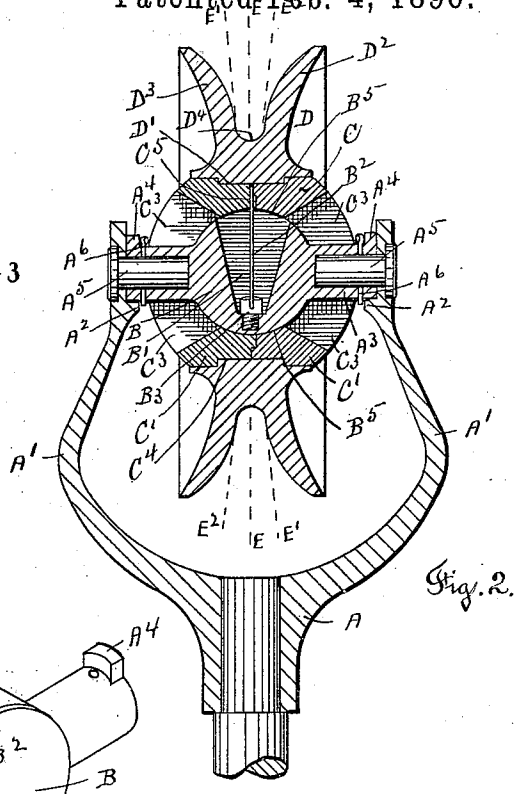

Fig. 2.

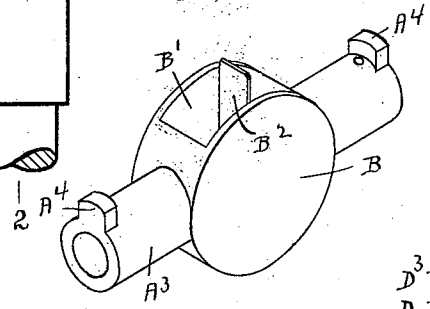

Fig. 4.

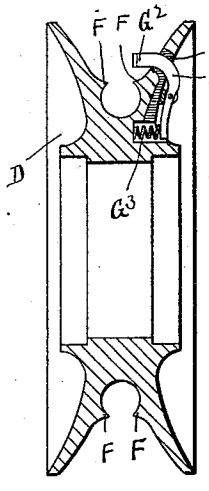

Fig. 5.

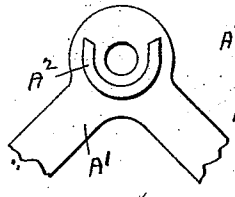

Fig. 6.

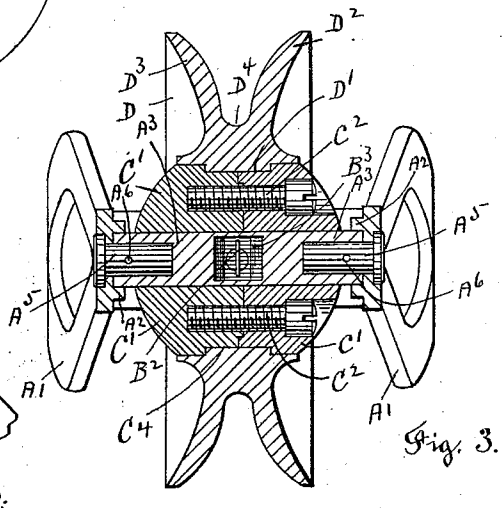

Fig. 3.

Witnesses
A. L. Whiting.
H. W. Fowler.

Inventor
Nelson Muslar
By his Attorney
Rufus B. Fowler.

UNITED STATES PATENT OFFICE.

NELSON MUSLAR, OF WEST BOYLSTON, ASSIGNOR TO HENRY F. HARRIS, OF WORCESTER, MASSACHUSETTS.

ELECTRIC TROLLEY.

SPECIFICATION forming part of Letters Patent No. 553,927, dated February 4, 1896.

Application filed April 9, 1894. Serial No. 506,969. (No model.)

To all whom it may concern:

Be it known that I, NELSON MUSLAR, a citizen of the United States, and a resident of West Boylston, in the county of Worcester and State of Massachusetts, have invented a new and useful Improvement in an Electric Trolley, of which the following is a specification, accompanied by drawings representing an electric trolley embodying my invention, and in which—

Figure 1 represents a side view of my improved electric trolley. Fig. 2 is a sectional view on line 2 2, Fig. 1. Fig. 3 is a sectional view on line 3 3, Fig. 1. Fig. 4 is a detached and perspective view of the central arbor by which the electric trolley is supported in the fork. Fig. 5 is a central sectional view of the trolley-wheel detached from its bearing and showing a modification by which the wheel is adapted to clear the trolley-wire of ice; and Fig. 6 represents the inner side of one of the prongs of the fork, showing the bearing or support of the spindle upon which the wheel is mounted.

Similar letters refer to similar parts in the different figures.

The object of my invention is to provide means for preventing an electric trolley from leaving the trolley wire or conductor and also to provide means by which the rotation of the trolley-wheel will clear the trolley-wire of ice.

Referring to the accompanying drawings, A denotes a fork in which the trolley is mounted, each of the prongs A′ A′ of the fork being provided upon their inner sides with a segmental rib A^2, which form a support or bearing for a spindle A^3, which is provided at its ends with spurs A^4 projecting radially from the spindle A^3 between the ends of the segmental ribs A^2. The spindle A^3 is held in place in the fork by means of pins A^5, which pass through the prongs A′ of the fork and enter the ends of the spindle A^3 and are held in place by means of cotter-pins A^6. The central section of the spindle A^3 is expanded into the form of a disk B provided with a triangular recess B′, within which is placed a blade-spring B^2 having one end attached to a screw B^3, which is held in the body of the disk, and with the opposite end of the spring projecting beyond the disk B.

Held upon the spindle A^3 and disk B is a cylindrical block C made in halves C′ C′ and united together by screws C^2.

The sides of the block C are recessed, as at C^3 C^3, to allow a lateral rocking motion to the block upon the curved edges B^5 of the disk. The outer surface of the cylindrical block C forms the bearing for a rotating wheel D which is held upon the block C by means of an annular internal rib D′ entering a corresponding groove C^4 in the block C, causing the wheel D to be securely held upon the block and be capable of rotating freely thereon.

The outer or free end of the blade-spring B^2 is inserted in a recess C^5 between the two halves C′ C′ of the block C, so that the tension of the spring will maintain the block in its normal position centrally upon the disk B, as represented in Fig. 2, which shows the position assumed by the wheel D when the trolley-wire is in alignment with the center of the wheel as held in the fork A; but in case the wheel D is carried to the right or left of the wire by the movement of the car the pressure of the wire against one of the flanges D^2 D^3 of the wheel will cause the cylindrical block C, upon which the wheel rotates, to be rocked upon the curved edges B^5 of the disk B, so that the plane of the wheel D, instead of standing in a vertical position, as indicated by the broken lines E E, Fig. 2, will be inclined to the right or left, as indicated by the broken lines E′ E′ or E^2 E^2, causing the blade-spring B^2 to be slightly bent, so that when the wheel D is again brought centrally beneath the trolley-wire the tension of the blade-spring B^2 will return the block C to its normal position, bringing the plane of the wheel back into a vertical position, as indicated by the broken lines E E, Fig. 2.

When the wheel D is carried by the fork A immediately beneath the trolley-wire, the wheel will be held firmly against the wire which rests in the bottom of the groove D^4 between the flanges D^2 D^3; but in case the wheel is moved toward the left, Fig. 2, the trolley will press against the flange D^2, causing the wheel to be tipped, changing the plane of the

wheel from a vertical position to an inclined position, as indicated by the broken lines E^2 E^2 and allowing the wheel D to run along the wire with its flange D^2 in contact therewith. Likewise, if the movement is to the right, Fig. 2, the pressure will be brought against the flange D^3, causing the plane of the wheel to be inclined toward the position indicated in the broken lines E' E' and allowing the wheel D to run with its flanges D^3 in contact with the wire.

The tipping of the wheel by the pressure of the wire against one or the other of its flanges allows the wheel to be held up with one of its flanges firmly against the trolley-wire, whereas if the wheel is maintained rigidly in a vertical plane the pressure of the wire against the inclined side of one of its flanges would cause the wheel to be depressed, for the reason that the inclined side of the flange would act as a cam-surface over which the wire would slide, thereby causing the wheel to be depressed low enough to allow the escape of the wire from between the flanges.

The opening between the ends of the segmental ribs A^2 is arranged upon the upper side, so that the position of the disk B will be held in a suitable plane to admit of the rocking of the block C, as described, when the trolley is in use, and as the radial spurs A^4 are smaller than the space between the ends of the segmental ribs they will permit a slight rocking motion of the spindle A^3 within its bearing, in order to allow for any variation in the angle assumed by the trolley-pole—as, for example, when the trolley is changed from one end to the other of the car by an angular movement of the trolley-pole, instead of being swung around upon the top of the car.

In Fig. 5 I have shown a modification in the interior surfaces of the flanges D^2 D^3, which consists in forming a rib F F upon each of the flanges, causing the space between the flanges and above the trolley-wire to be contracted, so that as the wheel D rotates the edges of the ribs F F will be brought into contact with the sides of the wire, causing any ice which has formed upon the wire to be cut or broken and removed by the action of the wheel. In addition to the ribs F F, I form a slot or recess G in one, or, if desirable, both of the flanges, and within the slot G, I pivot a lever G' having one end G^2 arranged to strike against the wire as the wheel D revolves, and to the opposite end I apply a spring G^3, which holds the lever in position, but allows the end G^2 to yield or be thrown outward whenever the lever is brought in contact with the wire or one of its hangers.

Although I have shown the spindle A^3 as held in the segmental ribs A^2 and capable of a slight oscillating movement in order to allow the plane of the disk B to be varied, such oscillation is unnecessary when the trolley is used with the trolley-pole, capable of being swung around from one end of the car to the other without angular movement, as commonly used, and in such cases I therefore prefer to hold the spindle A^3 fixed within the fork and incapable of oscillation.

The cylindrical block C, as represented in the accompanying drawings, is held upon the central spindle and is capable of a pivotal or rocking motion upon the curved sides B^5 of the disk B about an axis which is coincident with the center of the disk, and it will be obvious that the block C might be hung upon gudgeons or studs projecting from the sides of the disk so as to be capable of a pivotal or rocking motion in order to accomplish the lateral inclination of the wheel, and I therefore do not confine myself to the specific construction referred to and shown in the drawings; neither do I confine myself to the use of a spring in order to return the wheel D to a vertical plane, although I deem the use of such spring preferable.

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

1. The combination of a central spindle held from rotation, a cylindrical block held on said spindle and capable of a laterally-rocking motion, and a grooved wheel rotating around said block, whereby said wheel is capable of being inclined from a vertical plane, substantially as described.

2. The combination of a central spindle held from rotation, a cylindrical block pivoted on said spindle so as to be capable of a laterally rocking or oscillating motion, and having a peripheral groove, and a wheel journaled on said block and engaging said groove, whereby said wheel is capable of rotating about said block and also of a lateral oscillating motion, with its axis of oscillation at right angles with its axis of rotation, substantially as described.

3. The combination of a fork, a spindle held in said fork and having its central section in disk form, a cylindrical block formed in halves, united together and pivoted on said disk, said block being recessed at its sides so as to allow it to rock on the curved edges of said disk and a grooved wheel journaled on said block, substantially as described.

4. The combination of a spindle held from rotation, a block held on said spindle and capable of a pivotal or laterally-oscillating motion, a grooved wheel journaled on said block and a spring held by said spindle and engaging said block, whereby said wheel is normally held in a vertical plane, substantially as described.

5. The combination of a spindle held from rotation and having its central section in disk form, and provided with a recess, a spring held at one end in said recess, a block held on said spindle and engaged by the free end of said spring, and a wheel journaled on said block, substantially as described.

6. The combination of a fork provided with the segmental ribs A^2, A^2, a spindle held at its ends by said segmental ribs, radial spurs projecting from the ends of said spindle and between the ends of said ribs, by which the

rocking motion of said spindle is limited, a block held on said spindle and capable of a laterally-rocking motion and a wheel journaled on said block, substantially as described.

7. The combination with a flanged trolley-wheel, of a yielding pivoted lever held in said wheel with its end projecting within the flange of said wheel, and a spring applied to said lever to maintain it in position, substantially as described.

Dated this 28th day of March, 1894.

NELSON MUSLAR.

Witnesses:
RUFUS B. FOWLER,
EMMA KESTER.