(No Model.)

W. KAUP.

TROLLEY.

No. 553,410. Patented Jan. 21, 1896.

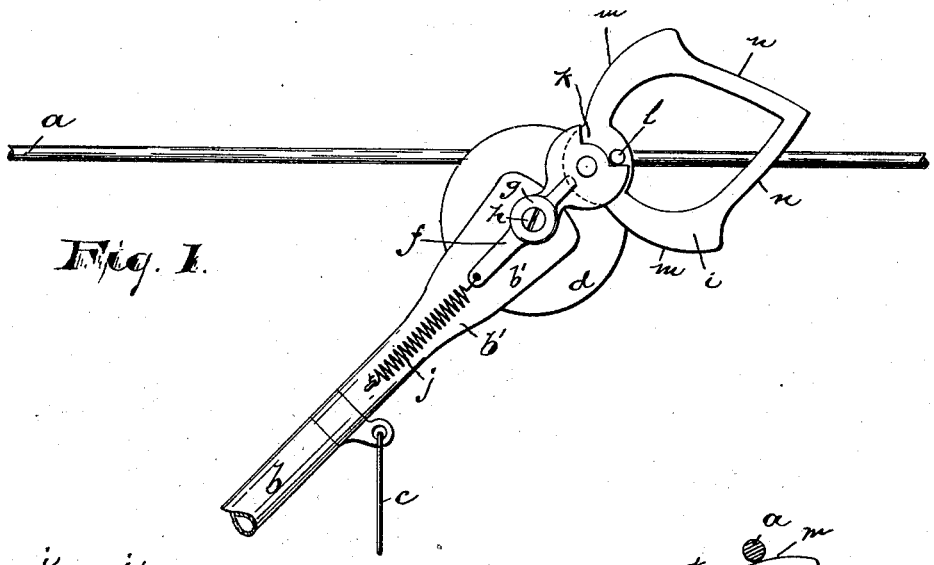

Fig. 1.

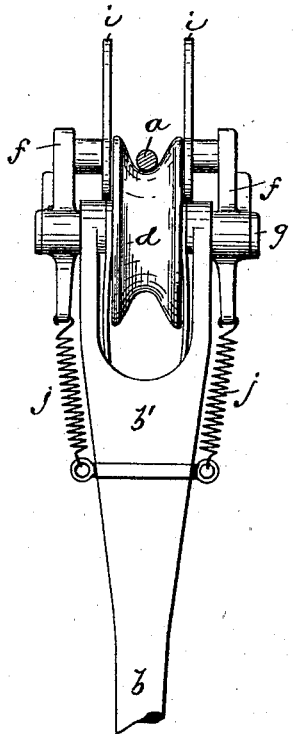

Fig. 3.

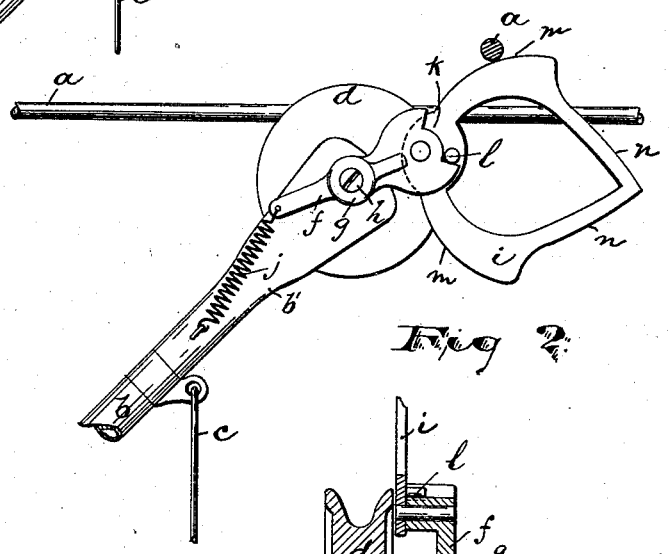

Fig. 2.

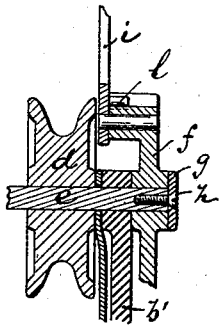

Fig. 4.

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UNITED STATES PATENT OFFICE.

WILLIAM KAUP, OF NEWARK, NEW JERSEY, ASSIGNOR OF ONE-HALF TO PETER ULRICH, OF SAME PLACE.

TROLLEY.

SPECIFICATION forming part of Letters Patent No. 553,410, dated January 21, 1896.

Application filed June 7, 1895. Serial No. 551,936. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM KAUP, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Trolleys; and I do hereby declare the following to be 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, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

The objects of this invention are to provide trolley-wheel guards, in connection with reversible trolley-poles, of greater simplicity of construction; to prevent interference of parts such as will derail the trolley; to render the trolley-guard automatically adjustable in relation to the pole, and to secure other advantages and results, some of which will be referred to hereinafter in connection with the description of the working parts.

The invention consists in the improved trolley-guard and in the arrangements and combinations of parts, all substantially as will be set forth, and finally embraced in the clauses of the claim.

Referring to the accompanying drawings, in which similar letters of reference indicate corresponding parts in each of the figures, Figure 1 is a side elevation of a portion of the trolley in connection with the wire and having my improvements attached. Fig. 2 is a similar side elevation showing the trolley in the act of passing a crossing wire. Fig. 3 is a front view of the same, and Fig. 4 is a sectional detail showing the relation of certain of the parts more clearly.

In said drawings, *a* indicates an ordinary conducting-wire, and *b* a trolley-pole adapted to be arranged in connection with the car in any suitable manner common in the art. *c* is a guide-rope which may be attached near the upper end of the pole, and *d* indicates the trolley-wheel, which is peripherally grooved to receive the conducting-wire in the ordinary manner. The upper end of the pole *b* is provided with a forked piece *b'*, between the ears or prongs of which is arranged the said wheel *d* on a pivotal pin *e*, Fig. 4, the ends of which extend beyond the outer faces of the said prongs and serve as pivotal bearings for lever-like guard-carriers *f*, which are held on said pivot by washers *g* and screws *h*, as indicated in Fig. 4. Said guard-carriers project from their pivotal or fulcrumal bearings beyond the extremities of the prongs, and their projecting ends provide pivotal bearings for the guards *i*. The said guard-carriers are held normally in the longitudinal center-line of the trolley-pole by springs *j*, but are allowed a limited play by said springs. At the upper projecting ends of said carriers, adjacent to the pivotal bearings of the guards, the same are flanged or broadened and at the outer extremities are provided with segmental slots or recesses *k*. Within the said recesses are disposed projecting pins or lugs *l*, which extend from the outer sides of the guards into said recesses, and the said guards are thereby allowed limited movements on their axial centers, for the purposes hereinafter referred to. The said guards are arranged to lie on opposite sides of the conducting-wire *a* and thus serve to prevent disconnection of the trolley by lateral movement should the trolley-wheel "jump" the wire. They are shaped so as to present to the crossing wires, in both forward and backward movements of the car, inclined surfaces by means of which the pressure of the said crossing wire will be brought gradually upon the guards to repress the same, as indicated in Fig. 2, and thus admit of a passage of the said guards thereunder.

The shape of the guards may be varied to some degree, but that preferred is shown in Figs. 1 and 2, where *m m* are the forward inclines adapted to engage the crossing wires in the forward movement of the car, and *n n* are rearward inclines adapted to engage the said wire when the car crosses the same in a backing movement. As the trolley-pole is changed in position of inclination to secure the reverse movements of the car, the pivoted guards *i i* being free to move on the pivot *e*, gravitate with a movement independent of the carriers *f* until stopped by the pins *l*, engaging the end abutments or shoulders of the slot or recess *k*, the guards thus automatically adjusting themselves to the new position of the trolley, so that the inclines *m n* will

be brought into proper relation to the crossing wires to secure the desired depression, either in the forward or rearward movement of the car beneath the crossing wire. Upon engagement of the crossing wire with the inclined surfaces of the guards the latter are forced downward with the carriers *f*, the latter turning on their fulcrumal centers to admit such movement.

Having thus described the invention, what I claim as new is—

1. The combination with the trolley pole and wheel, *d*, of guard-carrying levers arranged on opposite sides of said wheel, springs holding said levers in normal position and guards pivoted on said levers and free to gravitate a limited distance when the trolley pole is reversed, substantially as set forth.

2. The combination with the trolley pole and wheel, of a spring controlled guard-carrier, and guards having opposite inclines, *m*, *m*, and *n*, *n*, and pivoted on said carriers, substantially as set forth.

3. The combination with the trolley pole and wheel, of a spring controlled guard carrier, pivoted guards, each having a limiting pin or lug, *l*, and opposite inclines, *m*, *m*, and *n*, *n*, all arranged and operating, substantially as set forth.

4. The combination with the trolley pole and wheel, of a spring controlled guard recessed at its outer end, pivoted guards having limiting lugs or pins in the recesses of said guards and having opposite inclines, substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 31st day of May, 1895.

WILLIAM KAUP.

Witnesses:
OLIVER DRAKE,
CHARLES H. PELL.