

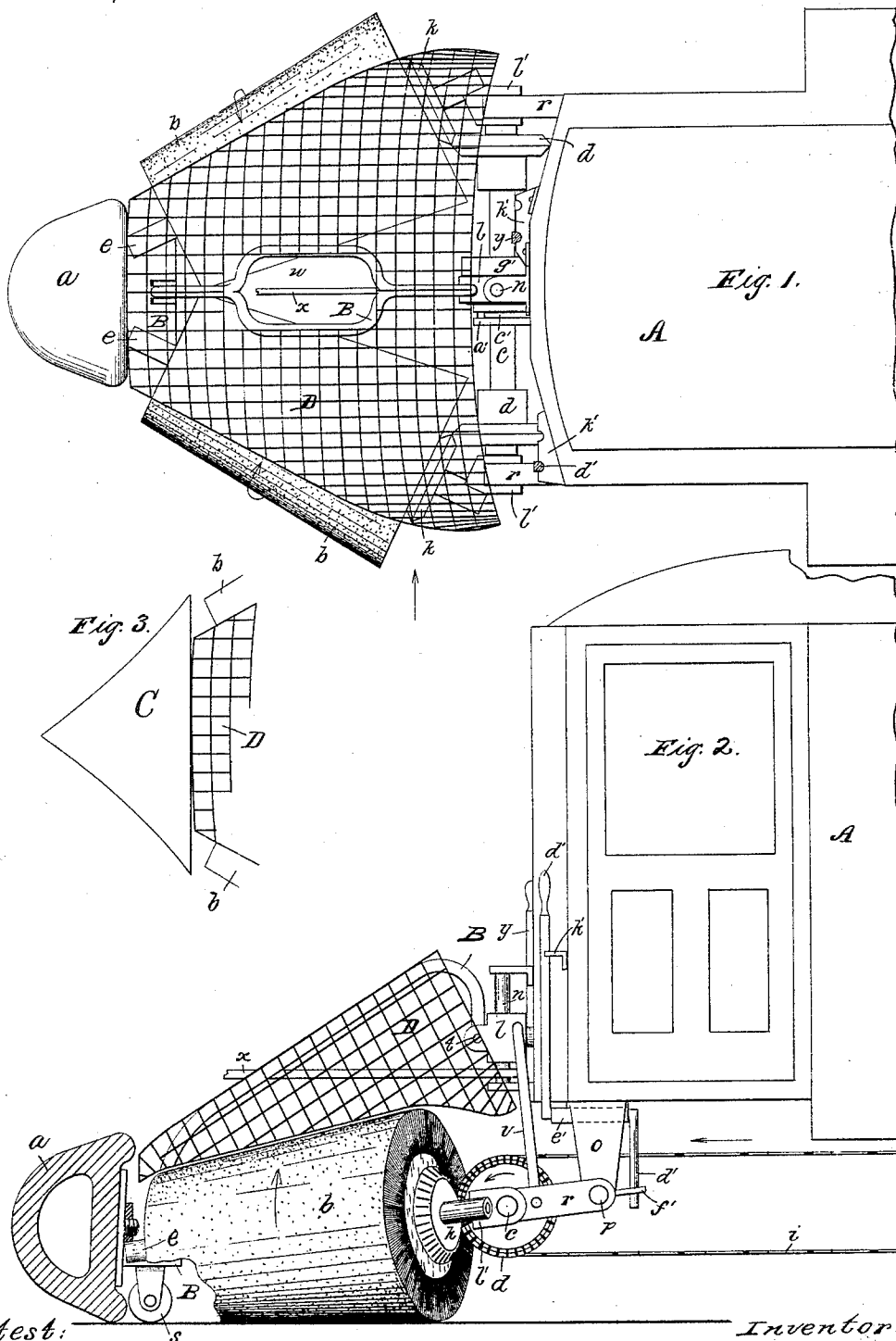
(No Model.)

2 Sheets—Sheet 1.

H. E. HARRIS.
LIFE GUARD FOR RAILWAY MOTORS.

No. 462,814.

Patented Nov. 10, 1891.



Attest:
M. S. M. Derrutt.
William Maguire

Inventor:
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By E. B. Whitworth

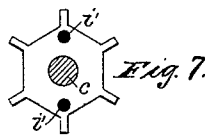
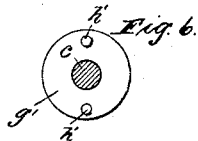
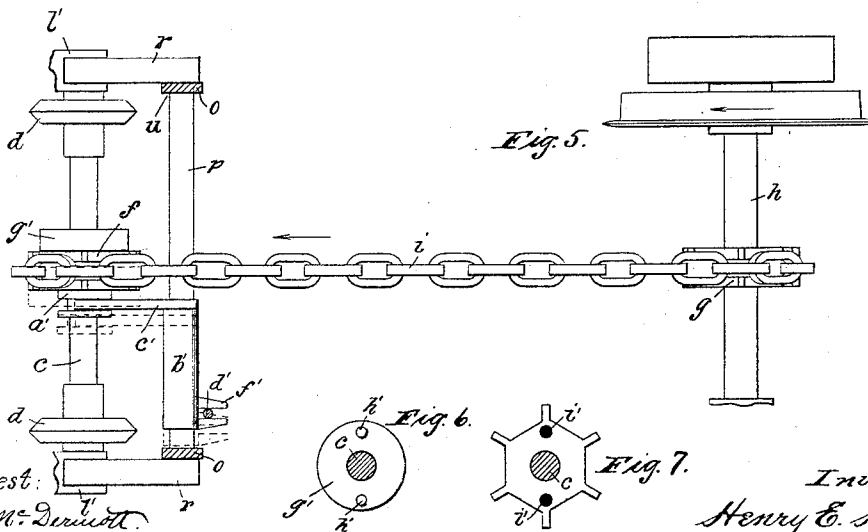
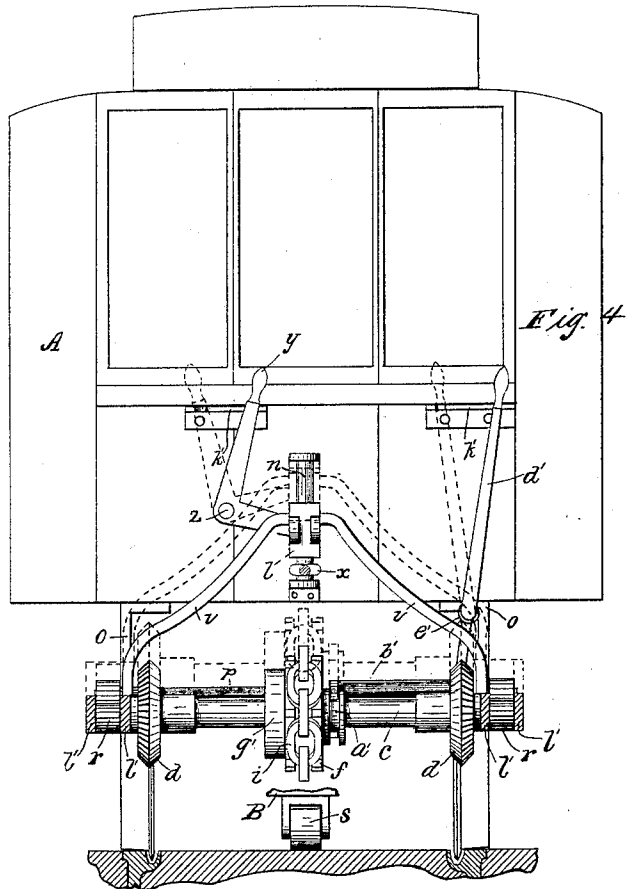
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2 Sheets—Sheet 2.

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Attest:
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UNITED STATES PATENT OFFICE.

HENRY E. HARRIS, OF ROCHESTER, NEW YORK.

LIFE-GUARD FOR RAILWAY-MOTORS.

SPECIFICATION forming part of Letters Patent No. 462,814, dated November 10, 1891.

Application filed June 27, 1891. Serial No. 397,732. (No model.)

To all whom it may concern:

Be it known that I, HENRY E. HARRIS, of Rochester, in the county of Monroe and State of New York, have invented a new and useful Improvement in Life-Guards for Railway-Motors, which improvement is fully set forth in the following specification and shown in the accompanying drawings.

Where motor railway-cars of any kind are run in the crowded streets of villages and cities there is danger of pedestrians being encountered and injured by them.

The object of my invention is to provide a life-guard or safety device attached to the front end of the car, by means of which, if persons or animals are encountered, they will be thrown or pushed out of the way of the car and so be left with little or no injury done them. The device also acts as a track-cleaner for removing snow, &c.

The invention is here shown attached to an electric motor for street-railways; and it consists in a light frame carrying a bumper or head and revolving brushes, with a catch-grating and other parts, all of which are hereinafter fully described, and more particularly pointed out in the claims.

Referring to the drawings, Figure 1 is a plan of the front end of an electric motor with my improved safety-guard attached in place. Fig. 2 is a side elevation of the same, seen as indicated by arrow in Fig. 1, parts being vertically sectioned. Fig. 3 shows a snow-plow substituted for the bumper. Fig. 4 is a front view of the car with the brushes and other parts omitted, parts being shown in two positions by full and dotted lines. Fig. 5 is a plan showing the driving mechanism beneath the car; Fig. 6, a side view of the rigid driving-collar, and Fig. 7 a similar view of the companion sprocket.

Referring to the parts shown, A is an electric motor for a street-railway, substantially of common kind.

B is a light frame projecting from the front end of the vestibule of the motor carrying an elastic bumper *a* in front and the forward ends of conical revolving side brushes *b*.

c is a horizontal transverse driving-shaft for the brushes beneath the floor of the car, provided with bevel-gears *d d* near its ends to revolve the brushes.

Rigid hangers *o o* project downward from the bottom of the car to hold a horizontal non-rotating shaft *p*, at the overhanging ends of which links *r r* are rigidly secured, extending forward to hold the shaft *c*. These links are also rigidly connected with bearings *l l*, for the rear ends of the brushes, each of which links with its connected brush-bearing *l*, being virtually (and may be really) one piece. The shaft *c* has its bearings in said respective links and brush-bearings *l*. The small ends of the brushes are placed in front and are substantially tangent to each other at their peripheries, while the large rear ends diverge sufficiently to throw any substances or bodies that may come in their way out of the way of the wheels of the car. The axes of the brushes are slightly inclined downward, so that the lower sides of the respective brushes will be parallel with the pavement. The upper curved part of the frame B is held in a block *l*, fitted to slide vertically upon a rigid post or slide *n*, secured to the car, while its lower end is supported by a roller *s*, resting on the pavement. The roller may, however, be omitted if not needed in any particular case, in which case the frame and the incumbent parts overhang the bearing *t* in the block *l* and the bearings *u u* of the shaft *p* in the hangers *o o*. The joint or bearing *t* is movable, so that when the car teeters or pitches while running the guard yields or swings in a vertical plane. This allows the roller *s*, with the bumper and brushes, to keep in contact with the pavement, (from their own weight,) and at the same time prevents these parts from being pressed too hard against the pavement by the downward tilting of the end of the car. This yielding of the parts of the guard in a vertical direction is permitted on account of the forward bearings *e e* sliding slightly longitudinally on the brush-shafts. When the forward end of the frame swings upward, it also swings forward, and backward when it swings downward. This occurs on account of the high position of the pivot-joint *t*. The brushes do not partake of this forward and backward motion when they swing in a vertical direction on account of the bearings *u u* being low. On account of this backward tendency of the lower part of the frame the bearings *e e* are kept normally snugly back

against the contiguous ends of the brush-bodies; but when the car tilts downward, instead of the roller being thereby pressed hard against the pavement, the forward part of the frame moves slightly forward away from the brush-bodies and relieves the stress, to return again against said brush-bodies when the car again rises.

A safety-grating D is secured to and covers the frame B and the brushes to prevent any considerable body of any kind being carried between the brushes and under the car. This open grating also furnishes a convenient and safe object for a person or animal to mount and cling to in case of imminent danger of being encountered by the car with no other way for escape.

f is a sprocket on the shaft *c*, and *g* a similar sprocket on the forward car-axle *h*, these sprockets being connected by a chain *i*, by means of which the brushes are revolved, the latter being provided with bevel-gears *k k* to meet the gears *d d* on the shaft *c*.

The block *l* is rigidly connected with the respective links *r r* by stiff rods *v v*, so that said block and links must move together. The frame is formed with an opening *w*, out through which the draw-bar *x* extends.

y, Fig. 4, is a bent lever pivoted to the car at *z* and connected by a pivot-joint to the rear side of the block *l*, by means of which the frame B and the brushes and other parts are lifted bodily from the pavement to bring the whole device out of action. In this operation the block slides upward along the post *n* and the shaft *p* turns in the hangers *o o*.

The sprocket *f* is loose on the shaft *c* and fitted to slide longitudinally thereon for the purpose of throwing the device out of gear to stop the rotation of the brushes. This sprocket is formed with a grooved hub *a'*, and the shaft *p* is provided with a loose sleeve *b'*, Fig. 5, which has an arm *c'* forked onto the hub *a'* and occupying the groove therein. *d'* is a lever bent under the car and held in a bearing *e'*, rigid with the car. The lower downturned end of this lever enters between jaws *f'*, rigid with the sleeve, by means of which mechanism, when the lever is turned in its bearing, the sprocket *f* will be moved along the shaft *c*. This shaft is provided with a rigid collar *g'*, having projecting pins *h'* parallel with the shaft, Fig. 6, and the sprocket is formed with corresponding holes *i'*, Fig. 7, by means of which, when the sprocket is thrown against the collar, the shaft *c* and the brushes will be turned, but when thrown back from the collar it will turn idly on the shaft and the brushes will be at rest. This shifting of the sprocket is done by the lever *d'*, and notched catches *k' k'*, rigid with the car, hold the levers *d'* and *y* in their different positions of adjustment. It is designed to place one of these life-guards at both ends of the car when the latter is reversed or run as a "double-ender," the guard at the rear end

in either case being lifted from the pavement and thrown out of gear, as above described.

The bumper *a* is made of india-rubber or similar elastic material, preferably hollow, so that it will yield like a cushion. Thus constructed, if a person be struck by it, even while the car is in rapid motion, the injury inflicted will be but slight, while the rebound of the bumper will serve to throw the person to one side or the other, where he will be swept out of the way of the wheels of the car by one or the other of the revolving brushes, which are designed to be sufficiently powerful for the purpose.

The bumper is detachable from the frame, and during the season of snow in northern latitudes I design to replace it by a plow C, Fig. 3, so that the device will act as a track-cleaner. This plow will serve to divide the snow in front, and is of such width as to push the snow on either side in the way of the brushes, to be further moved by them.

What I claim as my invention is—

1. A front guard for railway-cars, consisting of a frame, a bumper in front of the frame, and brushes at the sides of the frame back of the bumper, in combination with a safety-grate over the parts, substantially as and for the purpose specified.

2. A guard for railway-cars, having a supporting-frame connected with the car, combined with a bumper or head at the front of the frame, brushes in rear of the bumper, and a safety-grate over the frame, with means to lift said frame and parts, substantially as shown and described.

3. A front guard for railway-cars, having, in combination with a carrying-frame, an elastic bumper in front and revolving brushes at the sides, with means to turn said brushes, said bumper being detachable from the frame, substantially as and for the purpose set forth.

4. A guard for railway-cars, having a frame connected with the car, a bumper in front of the frame, revolving brushes at the sides of the frame, a safety-grate over the parts, and driving-gearing for the brushes, in combination with means to disconnect said driving-gearing, substantially as set forth.

5. A safety-guard for railway-cars, consisting of a frame, a bumper on the frame, brushes at the sides of the frame, a driving-shaft for the brushes, shiftable links to hold the driving-shaft and the brushes, a pivot-shaft for the links held by the car, a slide on the car for the frame, and a sliding block for the frame on the guide connected with the links, in combination with a shiftable lever for the sliding block, substantially as described and shown.

In witness whereof I have hereunto set my hand this 15th day of June, 1891, in the presence of two subscribing witnesses.

HENRY E. HARRIS.

Witnesses:

ENOS B. WHITMORE,
M. L. McDERMOTT.