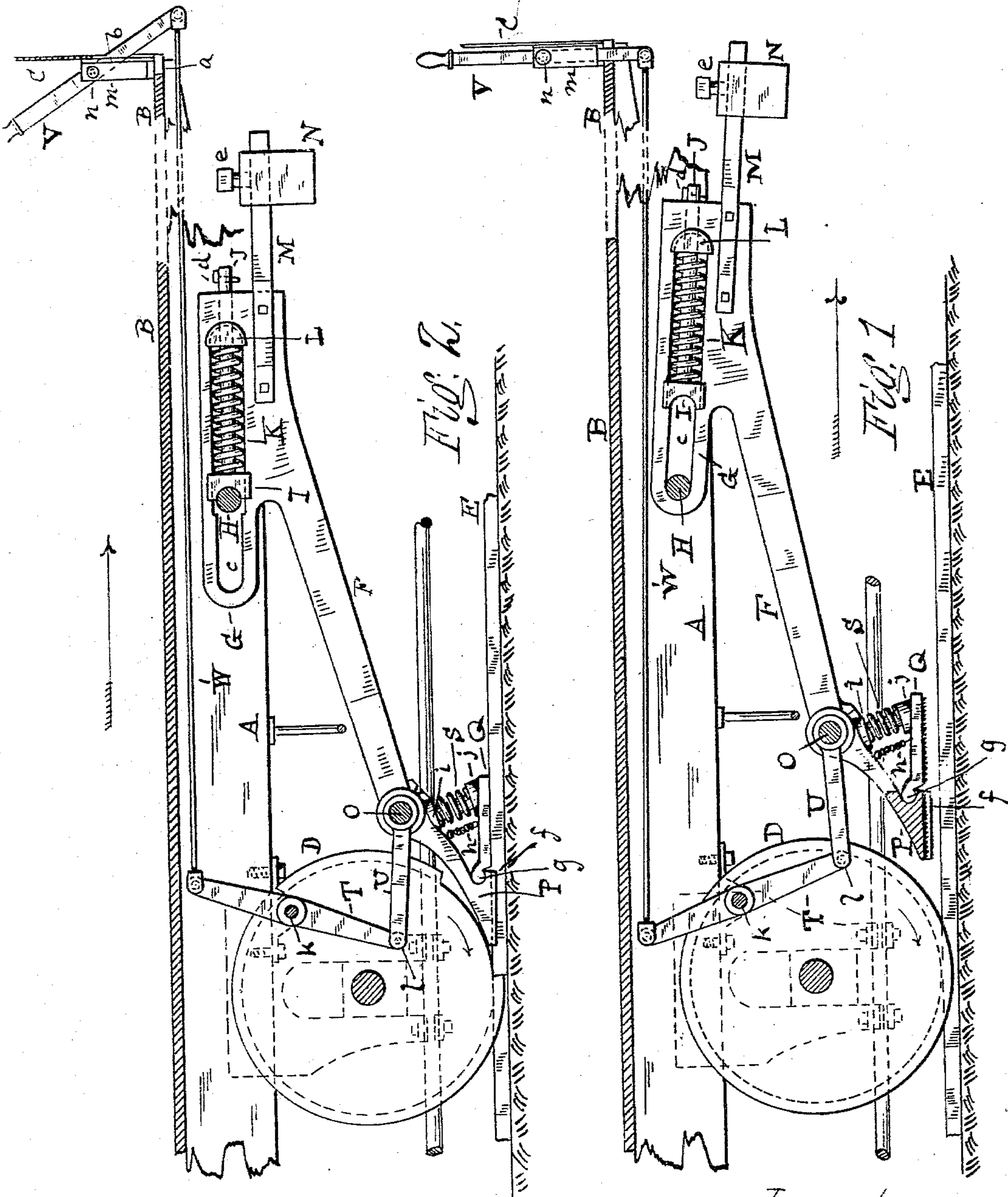


(No Model.)

A. H. WHEELER & J. GILBERT.
SAFETY DEVICE FOR ELECTRIC CARS, &c.

No. 556,949.

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Witnesses,

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UNITED STATES PATENT OFFICE.

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SAFETY DEVICE FOR ELECTRIC CARS, &c.

SPECIFICATION forming part of Letters Patent No. 556,949, dated March 24, 1896.

Application filed January 2, 1896. Serial No. 574,043. (No model.)

To all whom it may concern:

Be it known that we, ALBERT H. WHEELER and JOSEPH GILBERT, of the town of Warwick, in the county of Kent, in the State of Rhode Island, have invented a certain new and useful Improvement in Safety Devices for Electric Cars and other Vehicles; and we declare the following to be a specification thereof, reference being had to the accompanying drawings.

Like letters indicate like parts.

Figure 1 is a side elevation of our invention when the same is not in use. Fig. 2 is a side elevation of the same when in use.

Our invention is a safety device for electric cars and other vehicles; and it consists of a shoe and friction-plate hung upon a properly-mounted balanced lever, which has a long slot to receive a fixed fulcrum-pin, on which it can turn and slide in combination with properly-mounted levers and connecting-rods by which the lever first named can be unbalanced and caused to slide by its own weight upon said pin, and so to carry automatically the shoe and friction-plate into forcible contact with the car-wheel and street-rail, as hereinafter particularly specified.

In the drawings, A is a beam constituting a portion of the frame of the car.

B is the floor of the car, and C is the dashboard. The floor B and the dashboard C are slotted, as indicated at *a* and *b*, respectively.

The car-wheel is shown at D, and E represents the street-rail on which the car travels.

On each side of the car is a lever F provided with an arm G, which has a longitudinal slot, as seen at *c*. A pin H inserted strongly into the beam A of the body of the car serves as a fulcrum of the lever F, the width of the slot *c* being equal to the diameter of the pin H. A sliding buffer or block I having side flanges, as shown, is mounted in the slot *c* and is provided with a rod J. A strong spiral spring K surrounds the rod J and has one end bearing against the buffer-block I and the other end bearing against an enlargement or boss L. At the outer end of the rod J is a transverse pin *d*. A bar M bolted to the lever F sustains a weight or counterpoise N, which is adjustably movable on said bar and confined at the proper position by the set-screw *e*.

The levers F on the two sides of the car are

connected at their inner ends by the cross-rod O. On the cross-rod O on each side is pivotally hung a shoe P, whose upper edge is slightly curved and whose lower edge is straight and made with cross-serrations, as shown, and with flanges or lips *f* on the sides thereof. The upper and lower edges of the shoe give a wedge shape to the shoe. A friction-plate Q forms a companion for the shoe. It also has cross-serrations on its under surface, and its rear edge is formed into a bent lip *g*, whose edge is semicylindrical. The shoe P has a correspondingly-shaped groove to receive said lip of the friction-plate. The shape of said lip and groove is such that the shoe and friction-plate are loosely connected, so as to be inseparable by any longitudinal strain or pull, though they are readily attached or detached by a lateral movement, which enables the lip to be drawn out from said groove or to be inserted therein. A chain *h* connecting the shoe P and plate Q sustains the weight of the latter. The shoe P and plate Q have, respectively, bosses *i, j* with projecting studs or pins, whereon is mounted a spiral spring S.

A lever T is mounted on each side of the car upon a fulcrum-pin *k*, and a link-bar U, mounted by a collar upon the cross-rod O, is pivotally connected at *l* with the lever T, as shown.

Upon the platform of the car is a post *m*, upon which a lever-handle V is mounted on a pivot *n*. A rod W is pivoted at its forward end to the bottom of the lever-handle V and at its rear end to the top of the lever T.

Having thus described the several parts of our device, we will explain its operation.

The normal position of the parts of the device is shown in Fig. 1, and they are in this position while the car is running. The weight or counterpoise N is so adjusted on each bar M that the lever F, with its connected parts, is balanced as it is suspended upon the fulcrum-pin H. The shoe P and plate Q are elevated slightly above the rail E.

The device is operated by moving the handle V to the position shown in Fig. 2. This draws the rod W and pulls forward the tops of the levers T, which, moving on their fulcrum, draw to the rear the link-bars U, pivotally connected with the bottom of said levers

T, respectively. The link-bars U thus drawn by the levers T pull inwardly, toward the rear, the levers F, which are thereby caused to slide, by their slots *c* of their arms G, upon the fixed pins or fulcrums H, and the weight of the counterpoises N is thus overcome and the levers F, turning on said pins H, descend and bring the shoes P into position upon the rails E and under the wheels D, and with them the friction-plates Q, also upon the rails E, as fully illustrated in Fig. 2, the flanges *f* shutting down over said rails.

Fig. 2 represents the position of the parts of the device at the instant when the shoe and plate come into contact with the rails and before the car is stopped thereby. The momentum of the car or the power which propels the same causes the wheels D to leave the tracks E and to run up the curved edge of the shoes P. The shoes P act like wedges and prevent the further revolution of the wheels. At the same time the pressure of the wheels D upon the upper edge of the shoes P forces down said shoes upon the tracks, and with them the friction-plates Q, and the cross-serrations of said shoes and plates form friction-surfaces, which quickly operate as brakes against the tracks. The shock of the sudden stopping of the car is received on the springs S as the wheels D move upon the shoes P, but principally upon the springs K as the buffer-blocks I are brought forcibly against the fulcrum-pins H. The springs K yield and are compressed by the shock, and so are adapted to receive the greater part of the inertia and to save the car from severe strain.

The rearward movements of the levers F, with their arms G and other connected parts, is caused by gravity when once their balanced condition is changed, and as this movement is independent of and in a direction opposite to the forward travel of the car upon the track, and as the shoes P and their plates Q are loosely hung, it is possible for the wheels D to ride upon the shoes P by the momentum or power moving the car, and the shoes, thus serving as wedges, quickly stop the car in a very short space.

The essential feature of our invention being the wedge-shaped shoe, which normally is suspended above the track, but is capable when released of a movement to the track and immediately in front of the tread of the car-wheel to act as a wedge, it is immaterial by what mechanical means this movement and operation are accomplished, and therefore other mechanical devices having such function would be within the scope of our invention.

We claim as a novel and useful invention and desire to secure by Letters Patent—

1. In combination with a wheeled vehicle, a wedge-shaped shoe, loosely hung upon a lever, which is mounted by an elongated slot upon a fixed pin, inserted in the frame or body of the vehicle and which is capable of a sliding rearward movement upon said pin and provided

with a buffer having a spring, and mounted and movable in said elongated slot of the lever, all arranged and operating substantially as and for the purpose specified.

2. In combination with a wheeled vehicle, a wedge-shaped shoe, loosely hung upon a lever, which is mounted by an elongated slot upon a fixed pin, inserted in the frame or body of the vehicle, a weight adjustably mounted upon an extension of said lever and adapted as a counterpoise to hold the lever and its connected parts in equilibrium upon said pin, and means adapted to unbalance said lever for the purpose of allowing it to slide in a rearward and downward direction upon said pin to bring said shoe to a position just forward of the tread of the wheel of the vehicle, substantially as specified.

3. In combination with a wheeled vehicle, a wedge-shaped shoe, loosely hung upon a lever, which is mounted by an elongated slot upon a fixed pin, inserted in the frame or body of the vehicle, a weight adjustably mounted upon an extension of said lever and adapted as a counterpoise to hold the lever and its connected parts in equilibrium upon said pin, means adapted to unbalance said lever and move it in a rearward and downward direction as set forth, and a buffer provided with a spring and mounted movably in the elongated slot of said lever for the purpose of reducing the shock caused by the momentum of the vehicle, when suddenly stopped by said device, substantially as and for the purpose specified.

4. In combination with a wheeled vehicle, a wedge-shaped shoe, loosely hung upon a lever, which is mounted by an elongated slot upon a fixed pin, which is inserted in the frame or body of the vehicle, said lever being capable of a sliding rearward movement upon said pin, means adapted to impart to said lever such movement, and a friction-plate, suspended from said shoe and loosely connected at its rear edge therewith, and a spring, interposed between said shoe and friction-plate at their forward ends, substantially as described.

5. In combination with a wheeled vehicle, a wedge-shaped shoe, loosely hung upon a lever, mounted by an elongated slot upon a fixed pin, inserted in the frame or body of the vehicle, and capable of a sliding rearward movement upon said pin, means adapted to impart to said lever such movement, a friction-plate, suspended from said shoe and loosely connected at its rear edge therewith, a spring, interposed between said shoe and friction-plate at their forward ends, and a buffer provided with a spring upon the opposite end of said lever, substantially as specified.

6. In combination with a wheeled vehicle, a wedge-shaped shoe, loosely hung upon a lever, which is mounted by an elongated slot upon a fixed pin inserted in the frame or body of the vehicle, a weight adjustably mounted upon an extension of said lever and adapted as a counterpoise to hold the lever and its connected

parts in equilibrium upon said pin, means adapted to unbalance and move said lever for the purpose set forth and a friction-plate suspended from the shoe and loosely connected at its rear edge therewith, and a spring, interposed between said shoe and friction-plate at their forward ends, substantially as described.

7. In combination with a wheeled vehicle, a wedge-shaped shoe, loosely hung upon a lever, which is mounted by an elongated slot upon a fixed pin, inserted in the frame or body of the vehicle, a weight adjustably mounted upon said lever or an extension thereof, and adapted as a counterpoise to hold the lever and its connected parts in equilibrium upon said pin, means adapted to unbalance and move said lever for the purpose set forth, a buffer provided with a spring upon the opposite end of said lever, and a friction-plate, suspended from the shoe and loosely connected at its rear edge therewith, and a spring, interposed between said shoe and friction-plate at their forward ends, substantially as specified.

8. In combination with a vehicle having a wheel traveling upon a rail, a shoe having a curved top surface and a bottom surface, serrated crosswise, and mounted upon supports capable of upward and downward and rearward movements, and adapted to bring said shoe between the wheel and rail into forcible contact therewith, and a friction-plate, also serrated crosswise on its undersurface, loosely connected at its rear edge with the shoe and suspended from the shoe by a chain near the forward end, and springs, interposed between said shoe and plate, all arranged and operating substantially as and for the purpose set forth.

9. The improved safety device for electric cars and other vehicles herein described, consisting of the combination of a vehicle having a frame A, a floor B, and a dashboard C, slotted at *a* and *b*, respectively, and wheels D, adapted to travel on a rail E, levers F, each having an arm G, with an elongated slot *c*, a fulcrum-pin H, inserted in the frame A, and passing through the said slots *c*, buffer-blocks I, movable in the slots *c*, and provided with rods J, surrounded by spiral springs K having suitable bearings, bars M, extending from said levers and having thereon adjustable weights N, the cross-rod O connecting the inner ends of the levers F, a shoe P, on each side, mounted on the cross-rod O and having a curved top surface and a transversely-serrated bottom surface with flanges *f*, on the sides thereof, a friction-plate Q, loosely connected at its rear edge with each shoe P, and suspended by a chain *h*, from said shoe, bosses *i*, *j*, upon said shoe and friction-plate, respectively, a lever T, on each side, mounted on a fulcrum *k*, a link-bar U, on each side, mounted on the cross-rod O and pivotally connected with the lever T, at the bottom thereof, a post *m*, upon the floor or platform B, a lever-handle pivotally mounted on said post *m*, and rods W, pivotally connected at one end to the bottom of the lever-handle V, and at the other end to the top of the levers T, all arranged and operating substantially as shown and for the purpose specified.

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