

R. HIRSCH.  
SAFETY APPLIANCE FOR STREET CARS.

APPLICATION FILED DEC. 28, 1903.

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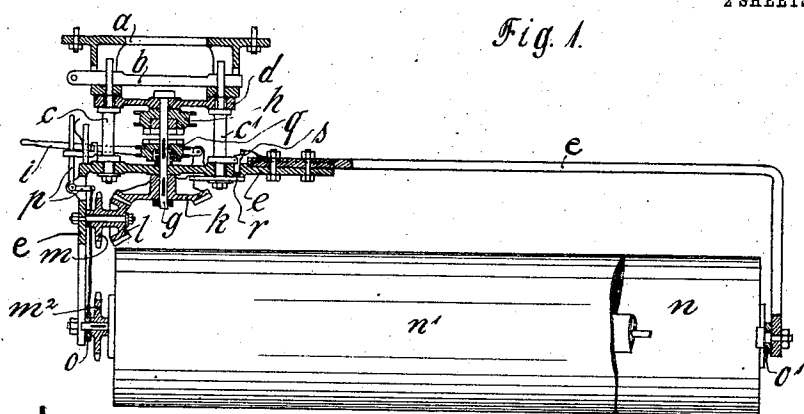


Fig. 1.

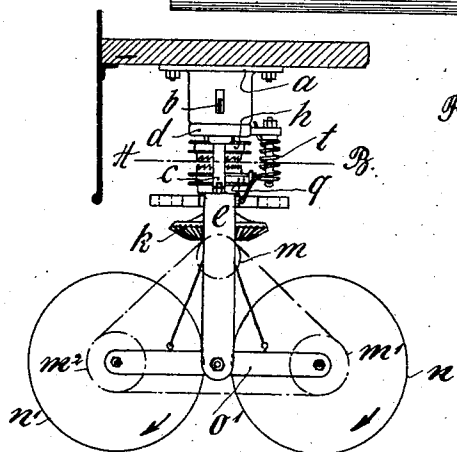


Fig. 2.

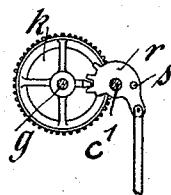
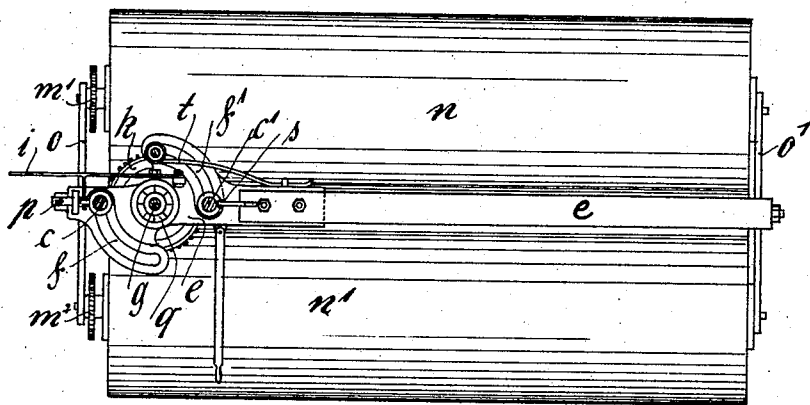


Fig. 4.

Fig. 3.

A ÷ B.



Witnesses:-

C. H. Schilling

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Inventor:-

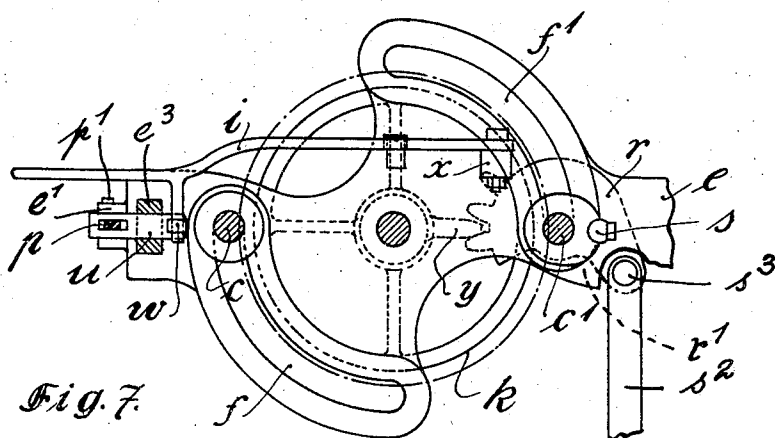
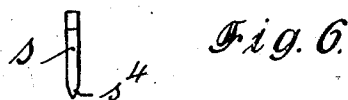
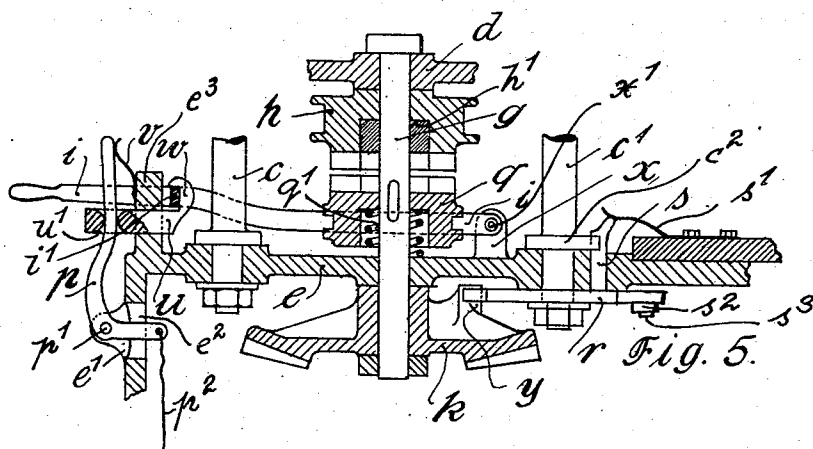
Robert Hirsch

by Paul C. Schilling  
his attorney

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2 SHEETS—SHEET 2.



Witnesses:—  
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# UNITED STATES PATENT OFFICE.

ROBERT HIRSCH, OF TEPLITZ-SCHÖNAU, AUSTRIA-HUNGARY.

## SAFETY APPLIANCE FOR STREET-CARS.

SPECIFICATION forming part of Letters Patent No. 787,574, dated April 18, 1905.

Application filed December 28, 1903. Serial No. 186,823.

*To all whom it may concern:*

Be it known that I, ROBERT HIRSCH, a subject of the Emperor of Austria-Hungary, and a resident of Teplitz-Schönau, Bohemia, Empire of Austria-Hungary, have invented certain new and useful Improvements in Safety Appliances for Street-Cars; 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.

My invention relates to an improved safety appliance for street-cars, having two rollers driven from the car-axle and rotating in a direction opposite to that of the wheels.

The present apparatus differs from prior appliances for the same purpose, inasmuch as the two rollers, which may be constructed as brushes, are suspended parallel to one another in two bars mounted in a common frame. The said bars oscillate in such manner that on meeting an obstruction one brush-roller is moved upward and the other downward, and the one end of the frame with the pair of brushes is released by disengagement of a stop device and swings round and forward on a vertical pin at the other end of the frame, so that the rollers take up a position parallel to the track. The rotation of the rollers on their longitudinal axes is not obstructed by the upward and downward motion nor by the oscillation.

My invention is illustrated in the accompanying drawings, in which—

Figure 1 is a longitudinal section of the apparatus; Fig. 2, an end view thereof, the adjoining portion of the car being shown in section. Fig. 3 is a section on the line A B of Fig. 2, the apparatus being at rest. Fig. 4 is a detail view showing the device for releasing the frame in which the rollers are mounted when the frame is oscillated out of the position of rest. Fig. 5 is a vertical section, drawn to an enlarged scale, of the clutch mechanism and immediately adjacent parts. Fig. 6 shows the pin of the stop mechanism separately. Fig. 7 is a sectional plan of Fig. 5.

*a* is a plate secured below the front part of the car, and to this plate the apparatus is secured by means of a key or pin *b*, inserted through slots in the pins *c c'*. The latter carry

a plate *d* and a yoke or frame *e*, suspended from the pins in such manner that it can be swung through a right angle, the motion being limited by the slots *f f'*, Figs. 3 and 7, through which the pins *c c'* pass. From the plate *d* there is pendent a spindle or pin *g*, on which is loosely mounted the flanged driving-pulley *h*, held in elevated position by means of a collar *h'*. The pulley is adapted to be driven from the car-axle by a strap or chain in any well-known manner, and its lower edge is provided with a clutch.

*i* is a lever pivoted at *x'* to a lug *x* of the frame *e*. This lever *i* actuates the spring-controlled clutch-half *q*, keyed to the pin *g* with capability of sliding vertically thereon. When the clutch-half *q* is caused to engage with the pulley *h*, the latter is thereby brought into engagement with the pin *g*, and thus with the bevel-wheel *l*, keyed thereon and meshing with the bevel-wheel *l*.

The sprocket-wheel *m* is rigidly connected with the wheel *l*, mounted in the frame *e*, and is connected by chain with the sprocket-wheels *m' m''*, Fig. 2, keyed to the shafts of the brushes *n' n''*, so that the rollers rotate with the sprocket-wheel *m*. The rollers *n n'* are mounted in the bars *o o'*, pivotally connected to the frame *e*.

*p* is a bell-lever pivoted at *p'* to the lug *e'* of the frame *e*. The horizontal arm of the lever *p*, which projects through a slot *e''* in the frame *e*, is attached by cords or chains *p''* to each arm of the bar *o*. The vertical arm of the lever *p* passes through the slot *u'* in a guide *u*, sliding in an upright part *e'''* of the frame *e*. The arm *i'* of the lever *i* (which latter engages the clutch-half *q* in well-known manner) is engaged by the nose *w* of the guide *u*, and a spring *v*, secured to the part *e'''*, presses against the vertical arm of the bell-lever *p*. In this manner the lever *i* is normally held down in the position shown in Fig. 5, so that the clutch-half *q* is kept out of engagement with the pulley *h*.

Below the clutch-half *q* is a spiral spring *q'*, the function of which is after release of the lever *i* by the nose *w* (in the manner hereinafter described) to effect coupling of the parts *q h*.

The frame *e* is maintained in its position of rest by a pin *s'* which passes through the frame *e* and is pressed against the toothed disk *r* by means of a spring *s'*, secured to the frame *e*. The flange *c'* of the pin *c'* is furnished with a recess in which the pin *s* lies. The disk *r* is provided with three teeth, with which the tooth *y* or the like, cast on the bevel-wheel *k*, engages. If now the two parts *h* *g* are coupled by release of the lever *i*, the tooth *y* will turn the disk *r* in three different periods, during which the rollers *n n'* have time to be set in full rotation. When the last period of rotation of the disk *r* has been completed, the recess or gap *r'* in the same will have come below the point *s'* of pin *s*, which will accordingly be depressed under the influence of the spring *s'* and will leave the recess in the flange *c'* of the pin *c'*. The latter is thus released, so that the frame *e* under the influence of the spring *t* will swing round out of its position of rest, so causing the already rapidly-rotating rollers *n n'* to take up a position substantially parallel to the track.

The operation of the apparatus is as follows: In the normal position the rollers *n n'* lie crosswise of the track parallel to the front of the car. Immediately the front roller meets with an obstruction—for instance, the body of a man or animal—the bars *o o'*, in which the rollers *n n'* are mounted, will be thrown out of the horizontal position by the resistance offered by the obstruction exerting a pull on the cord or chain *p'*, so causing the lever *p* to overcome the pressure of the spring *v* and push the guide *u* inward, thus releasing the arm *i'* from the nose *w*. The lever *i* is thus released, and by the action of the spiral spring *q'* the clutch-half *q* will be raised and brought into engagement with the pulley *h*. The latter, as already described, is adapted to be driven by a rotating car-axle, which may be belted thereto in any desirable manner and will transmit the rotary motion by means of the gear-wheels *k l* and the sprocket-wheels *m m'* to the rollers *n n'*. At the same time the disk *r* will be set in rotation by the tooth *y* of the bevel-wheel *k*, and the pin *s* under the influence of the spring *s'* will be depressed into the gap *r'* and will release the flange *c'*, so that the spring *t* will pull the frame *e* forward as far as the slots *f f'* will permit. This motion of the rollers will cause the obstruction to be thrown aside, and as the rollers rotate in an opposite direction to that of the car-wheels, so that the fronts of the rollers move upwardly, there is a tendency to raise the body from the ground. The whole operation goes on without any action on the part of the driver immediately the rollers meet with an obstruction. After the apparatus has performed its work it is brought back to the position of rest by pushing the free end of

the frame *e* below the car again. The disk *r* must then be returned to its initial position by pulling the rod *s'*, pivoted at *s'* to the disk *r*, until the conical point *s'*, Fig. 6, of the spring-actuated pin *s* is lifted by the disk *r*, whereupon the pin *s* snaps into place and retains the frame *e* again. The lever *i* must now be depressed and the rollers *n n'* set horizontally, the nose *w* of the guide *u* being again caused to grip over the arm *i'* of the lever *i*, and so retain it in place.

Having thus described my invention, what I claim is—

1. A safety appliance for street-cars, comprising a plate *d* secured to the car, a spindle *g* pendent from the plate, a pulley *h* driven by the car-axle loosely mounted on the spindle, a clutch *q* keyed to the spindle, pins *c, c'* pendent from the car and passing through the slots of and supporting the yoke, a bevel-wheel *l* meshing with the wheel *k*, mounted on the yoke, a sprocket-wheel *m* rigidly connected therewith, cross-bars *o, o'* pivoted at either end of said yoke, rollers *n, n'* mounted at the ends of the bars, sprockets *m', m''* keyed to the shafts of said rollers and connected by chain to the sprocket *m*, means actuated by the bar *o*, normally holding the clutch *q* out of engagement, means for retaining the yoke parallel to the car-front, and means for releasing the same whereby on the rollers meeting with an obstruction, the bars *o, o'* oscillate and the rollers are set in motion in a direction opposite to that of the car-wheels, the yoke at the same time swinging round, whereby the obstruction is lifted and thrown from the track, substantially as described.

2. A safety appliance for street-cars, comprising a plate *d* secured to the car, a spindle *g* pendent from the plate, a pulley *h* driven by the car-axle loosely mounted on the spindle, a spring-actuated clutch *q* keyed to the spindle, pins *c, c'* pendent from the car and passing through the slots of and supporting the yoke, a bevel-wheel *l* meshing with the wheel *k*, mounted on the yoke, a sprocket-wheel *m* rigidly connected therewith, cross-bars *o, o'* pivoted at either end of said yoke, rollers *n, n'* mounted at the ends of the bars, sprockets *m', m''* keyed to the shafts of said rollers and connected by chain to the sprocket *m*, a spring-actuated bell-lever *i* pivoted to the yoke, connected to the arms of the bar *o* and normally holding the clutch *q* out of engagement, means for retaining the yoke parallel to the car-front and means for releasing the same, substantially as described.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

ROBERT HIRSCH.

Witnesses:

CHAS. L. COLE,  
PAUL ARRAS.