

No. 730,740.

PATENTED JUNE 9, 1903.

R. S. BURN.

SAFETY GUARD FOR ELECTRIC TRAM CARS OR SIMILARLY  
PROPELLED VEHICLES.

APPLICATION FILED AUG. 2, 1902.

NO MODEL.

2 SHEETS—SHEET 1.

FIG. 1.

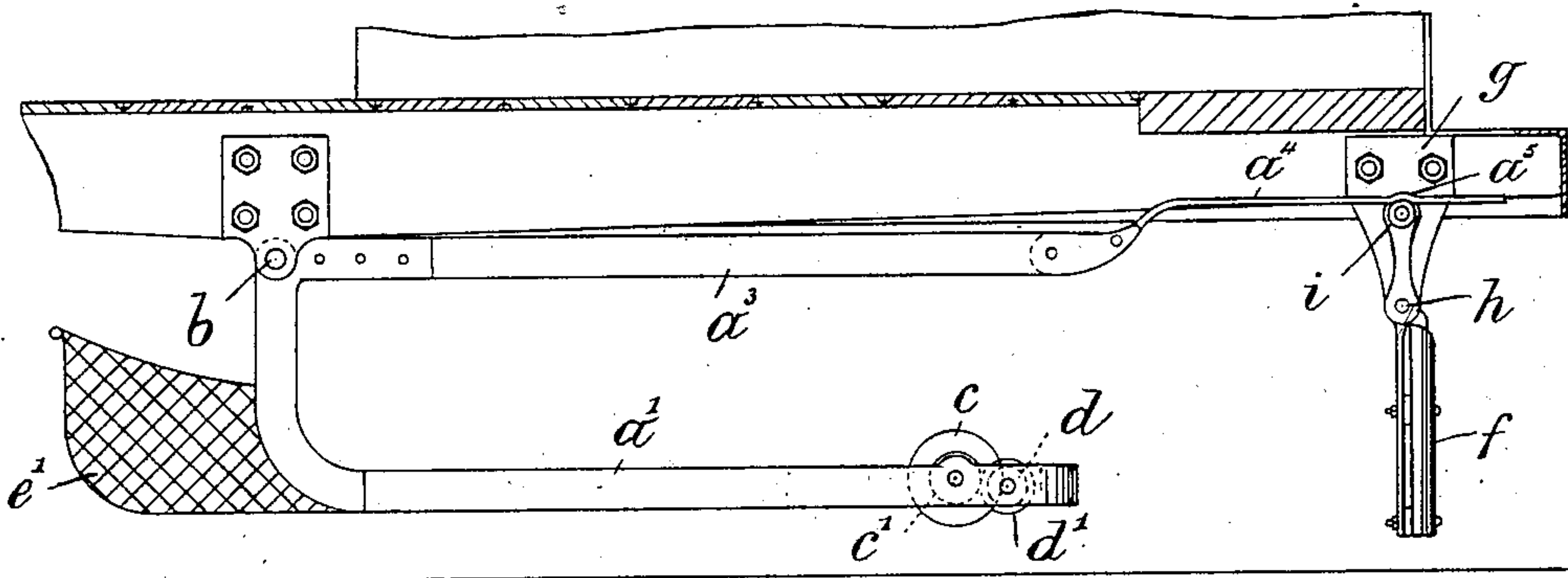
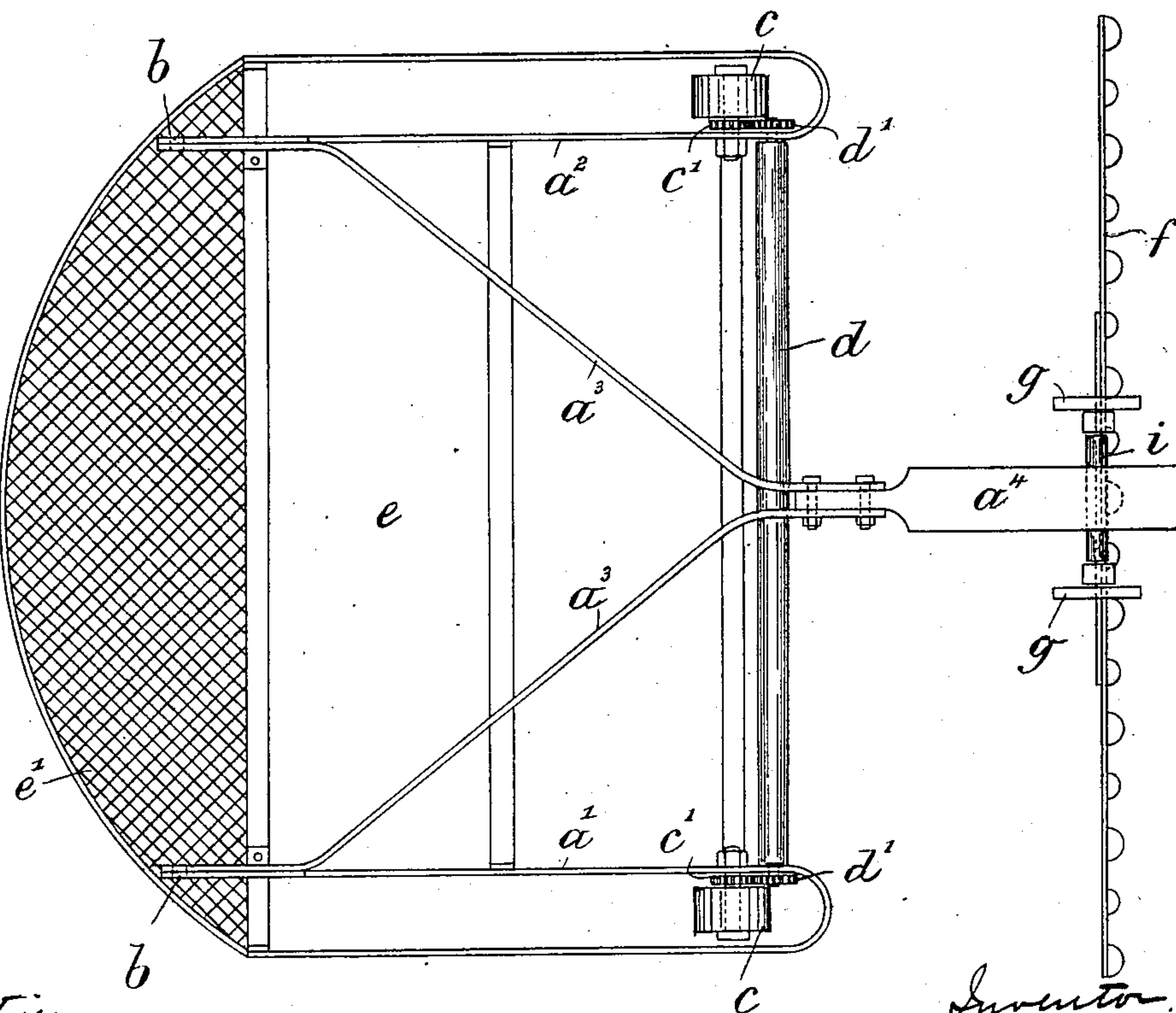


FIG. 2.



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2 SHEETS—SHEET 2.

FIG. 3.

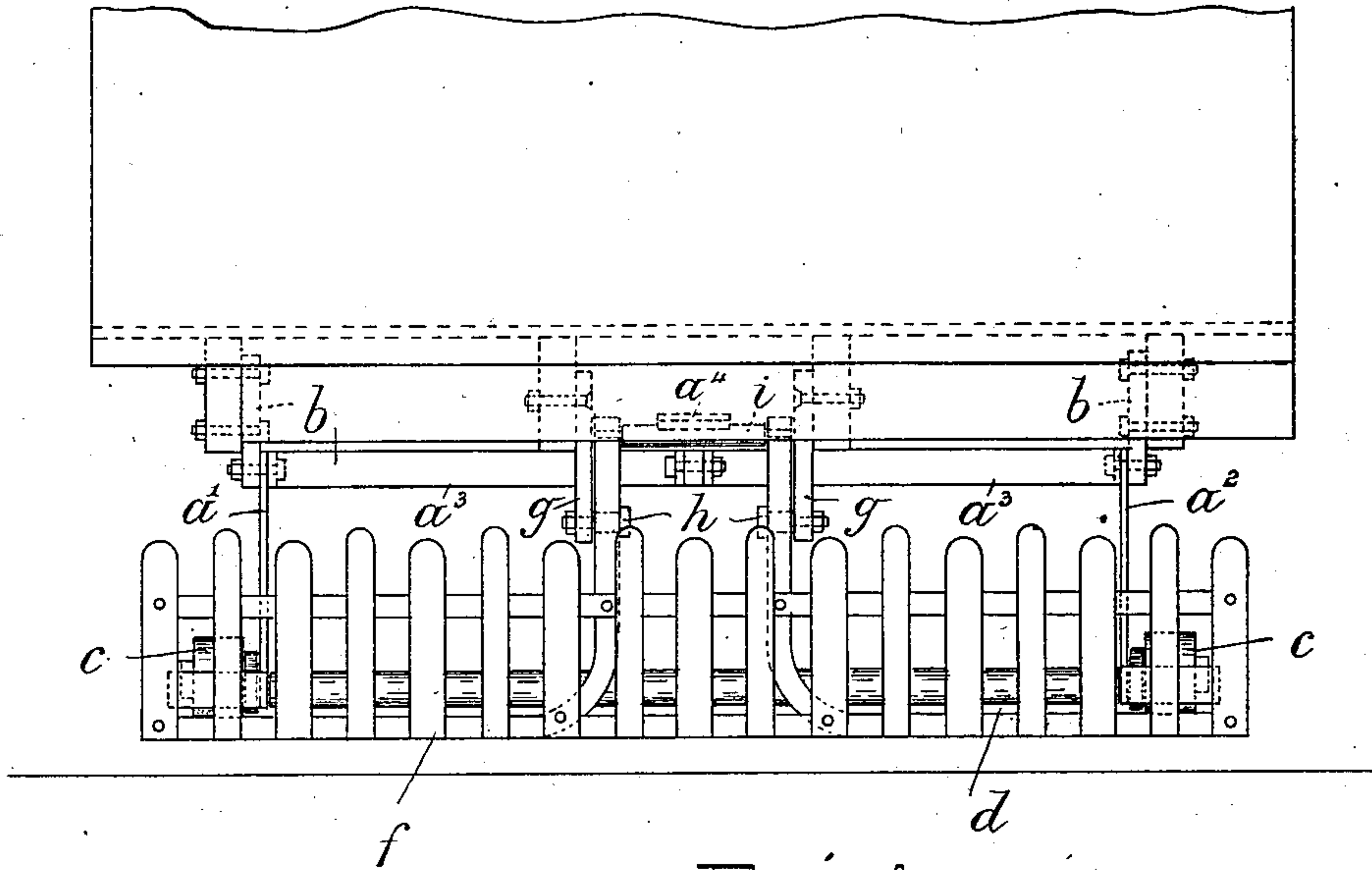
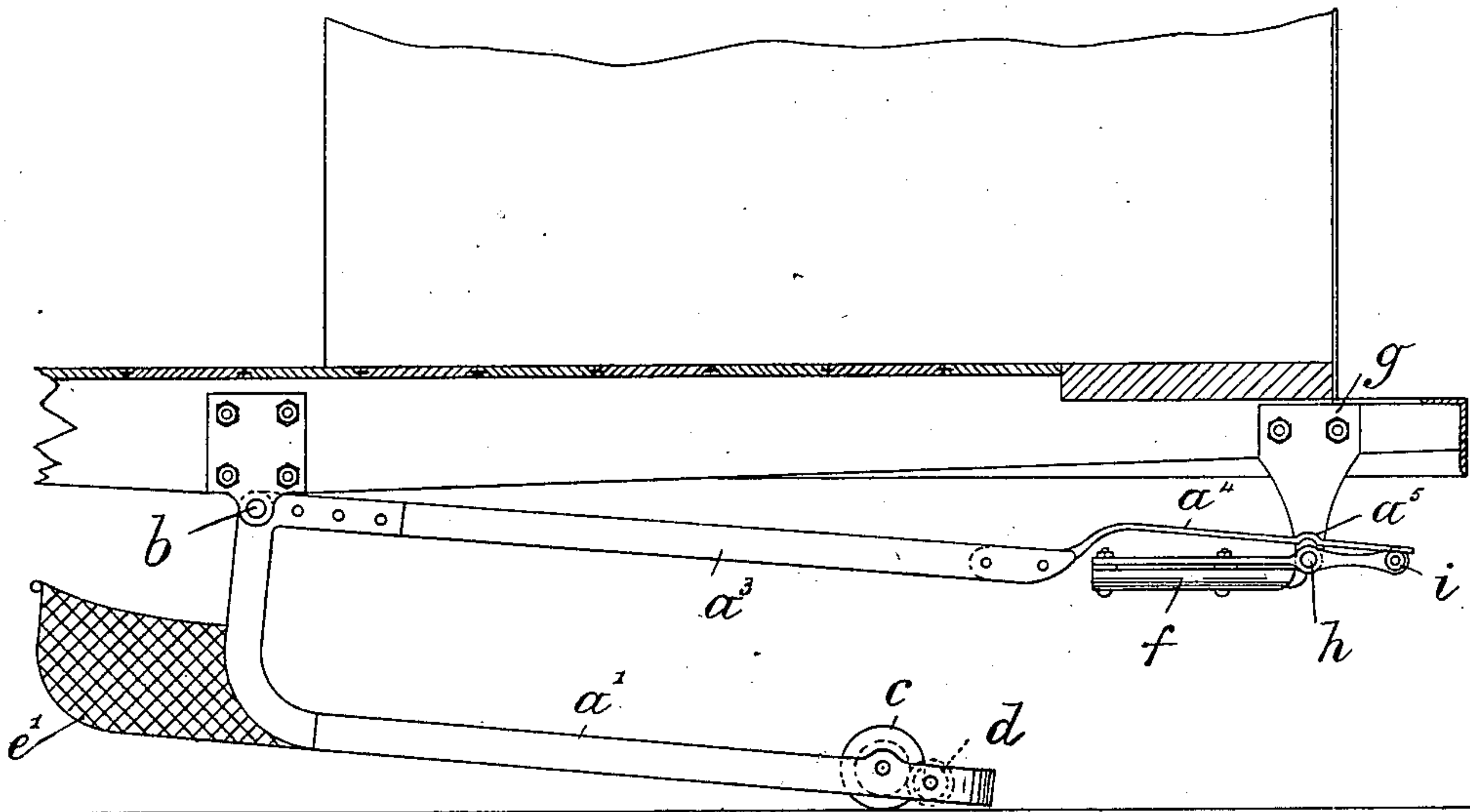


FIG. 4.



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# UNITED STATES PATENT OFFICE.

ROBINSON SCALING BURN, OF KINGSTON-UPON-HULL, ENGLAND.

SAFETY-GUARD FOR ELECTRIC TRAM-CARS OR SIMILARLY-PROPELLED VEHICLES.

SPECIFICATION forming part of Letters Patent No. 730,740, dated June 9, 1903.

Application filed August 2, 1902. Serial No. 118,195. (No model.)

*To all whom it may concern:*

Be it known that I, ROBINSON SCALING BURN, a subject of the King of Great Britain and Ireland, residing at Kingston-upon-Hull, in the county of York, England, have invented certain new and useful Improvements in Safety-Guards for Electric Tram-Cars and the Like or Similarly-Propelled Vehicles; 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.

This invention relates to safety-guards to be used in connection with tram-cars and the like vehicles when designed for propulsion by electrical or other self-propelling or mechanical power as distinguished from horses running in front, and has for its object the prevention of accidents when persons or obstructions of a dangerous size are encountered by the car when in motion.

By the application of my invention serious accidents are prevented, especially of the kind in which a person or dangerous obstruction might be drawn under the car, the guard being so constructed and adapted for its purpose that any person or obstruction coming into contact therewith is rolled onto the guard and lodged onto the tray, recess, or cavity provided in the same until the car is pulled up.

A guard constructed according to my invention is brought into action automatically and is in no way dependent upon the watchfulness or assistance of the driver. Its efficiency is not affected by the rise and fall of the car when loaded or unloaded nor by the oscillation or tilting of the car, which sometimes takes place, especially when passing over a crossing.

Having thus indicated the nature and utility of my invention, I will now proceed to describe a convenient method of applying it to the usual type of tram-car for electrical propulsion, in which the guard is placed under the platform of the car at any distance from the front which may be found desirable.

In order to illustrate the operation of my invention, I have embodied it in the form

shown in the annexed sheets of drawings as being especially applicable to street or tram cars, it being understood that the principle of action, with modifications of detail, is also applicable to other vehicles which are mechanically propelled and are therefore liable to encounter obstructions in the like manner and with the like results.

In the drawings the body of the car is omitted and only those parts included by way of diagram which are concerned with the application thereto of my said invention.

Figure 1 is a sectional side elevation of the front part of an electric tram-car with my improved guard or obstruction-remover attached thereto, showing the guard or fender in its normal position. Fig. 2 is a plan view of the apparatus itself, the underframe or body of the car being entirely removed. Fig. 3 is a front elevation corresponding to Fig. 1; and Fig. 4 is a similar view to Fig. 1, showing the guard in action when an obstruction has been encountered.

In its general construction two side frames  $a'$   $a^2$ , of any suitable design or material, with an upper frame  $a^3$  connected to them, are pivotally hung in brackets  $b$   $b$ , attached to the under portion of the car, each side frame being furnished at the forward portion thereof with a roller  $c$ , adapted to run on the tram-lines or tram-track, being made of cast-iron or other hard or durable material, such as lignum-vitæ or hard wood, which may be covered with corrugated india-rubber to induce grip and make as little noise as possible. These rollers are mounted each on its own axle as an attachment to the side frames, or they may be mounted in any other way desirable, so long as they are adapted to run upon the tram line or track as bearers to the guard-frame whenever the guard is brought into action.

The front of the guard consists of an india-rubber or composite roller  $d$ , of suitable material or hard wood, on an iron or steel spindle extending across the track of the tram-car and mounted on a center spindle journaled into the side frames. When the guard is brought into action, as shown in Fig. 4, this



roller is kept just clear of the ground-level and rises and falls automatically to suit the unevenness of the ground. To insure this result, the rollers *c* or line-runners are made to touch the ground first and of course revolve in the same direction as the car-wheels; but the front or guard roller *d* must revolve in the reverse direction to the travel of the car, this being essential for the purpose of my invention. This reverse motion is produced by any suitable mechanism, such as affixing a small spur-wheel *c'* on each side frame, each gearing into a wheel *d'* on each end of the guard-roller *d*, the said gearing being driven from the side-frame runners *c* or car-axles. It will thus be seen that the effect of this guard-roller *d* running in the reverse direction to the travel of the car will be to draw any person or object in the way of the tram-car onto the guard to be lodged onto the tray or receptacle *e*, provided for the purpose. Guard-plates are provided so as to prevent any object becoming entangled with the runners *c*. The tray or receptacle *e*, which extends toward the back portion of the guard at *e'*, takes the form of a cavity or apron or stretcher of any desired size or depth, interlaced with wire-netting, perforated zinc, or other suitable material, onto which, as before stated, the object encountered is conveyed by the action of the front or guard roller *d*.

It will thus be observed from the foregoing description that the side frames being pivoted on brackets *b* and the forward part thereof furnished with rollers *c*, adapted to run on the tram-lines, when the guard is brought into action the picking-up or guard roller *d* will always be kept clear of the ground and the weight of the guard and the reverse motion of the roller *d* will do away with any possibility of any person or object being drawn under the guard.

The sides of the guard are provided with wire-netting protectors set in frames, or any other suitable method may be adopted for the same purpose.

A further important feature of my invention is to prevent the guard being in constant operation, thus saving a considerable amount of wear and tear and loss of power to the tram-car and yet to insure that the same shall commence working instantaneously and automatically when required or, in other words, when any person or object collides with the car. To accomplish this, a turnstile *f*, latticed and made as light and efficient as possible, is pivotally suspended in brackets *g g* or hung down in front of the car. This turnstile is pivoted in the center at *h* or preferably a little nearer the top, and the liberating action of drop-gear is taken from the top portion thereof. On the top edge of this turnstile a smaller roller *i* is provided in line with the forearm  $\alpha^4$  of the upper arms  $\alpha^3$  of the side frames of the

guard, which forearm extends toward the front of the car, so as to rest on the roller *i*. When the guard is not in operation, the line-runners *c* are in this way lifted any suitable distance clear of the lines, as shown more particularly in Fig. 1. When an obstruction is encountered, the turnstile is pushed in, which dislodges the upper forearm  $\alpha^4$ , thereby automatically dropping the roller-frame onto the runners, which then run along the track, preferably on the tram-rails, as shown more particularly in Fig. 4. The effect of this arrangement is that the inward movement of the turnstile deprives the guard-frame of the support provided to keep the guard and its runners clear of the ground. Consequently as the guard-frame drops the runners are brought into contact with the ground and the guard into action. Having effected its purpose, the turnstile *f* drops back to its normal position by gravity and in doing so lifts the guard to its normal position. In order to prevent the turnstile from swinging about through the motion of the car, the forearm  $\alpha^4$  is recessed at  $\alpha^5$  to the extent sufficient to prevent this, or, if desired, suitable means may be attached to the footboard of the car to enable the driver to lift the guard clear of the ground after same has been in operation; but this may be done in any convenient way before restarting the car.

In conclusion I would observe that having illustrated in the drawings forming part of this specification the essential features of my invention, together with the use to which it is applicable, it must be understood that I do not restrict myself to the precise details or construction as shown, as changes in form, proportion, and the minor details of construction may be resorted to without departing from the principle or sacrificing the advantages of the invention.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A safety-guard for electric, or other vehicles, comprising a pivotally-suspended guard-frame, supporting-rollers mounted in said frame, a guard-roller extending across the front of said guard-frame, means for rotating said roller in a reverse direction to that of said supporting-rollers, an upper frame carried by said guard-frame, a turnstile pivotally suspended in advance of said guard-frame and adapted to normally retain said upper frame in an elevated position.

2. A safety-guard for electric or other vehicles, comprising a pivotally-suspended guard-frame, supporting-rollers mounted in the forward end of said frame, a guard-roller mounted in advance of said supporting-rollers, gearing interposed between said guard and supporting rollers to cause said guard-roller to rotate in a reverse direction to that of said supporting-rollers, an upper frame extend-



ing forwardly from said guard-frame, brackets between which said upper frame passes, a turnstile or gate pivotally suspended from said brackets, and an arm carried by said  
5 turnstile to normally retain said upper frame elevated, and to automatically release said frame from its normal position.

In testimony whereof I affix my signature in presence of two witnesses.

ROBINSON SCALING BURN.

Witnesses:

HATTIE COMECK,  
CHARLES LARARD.