

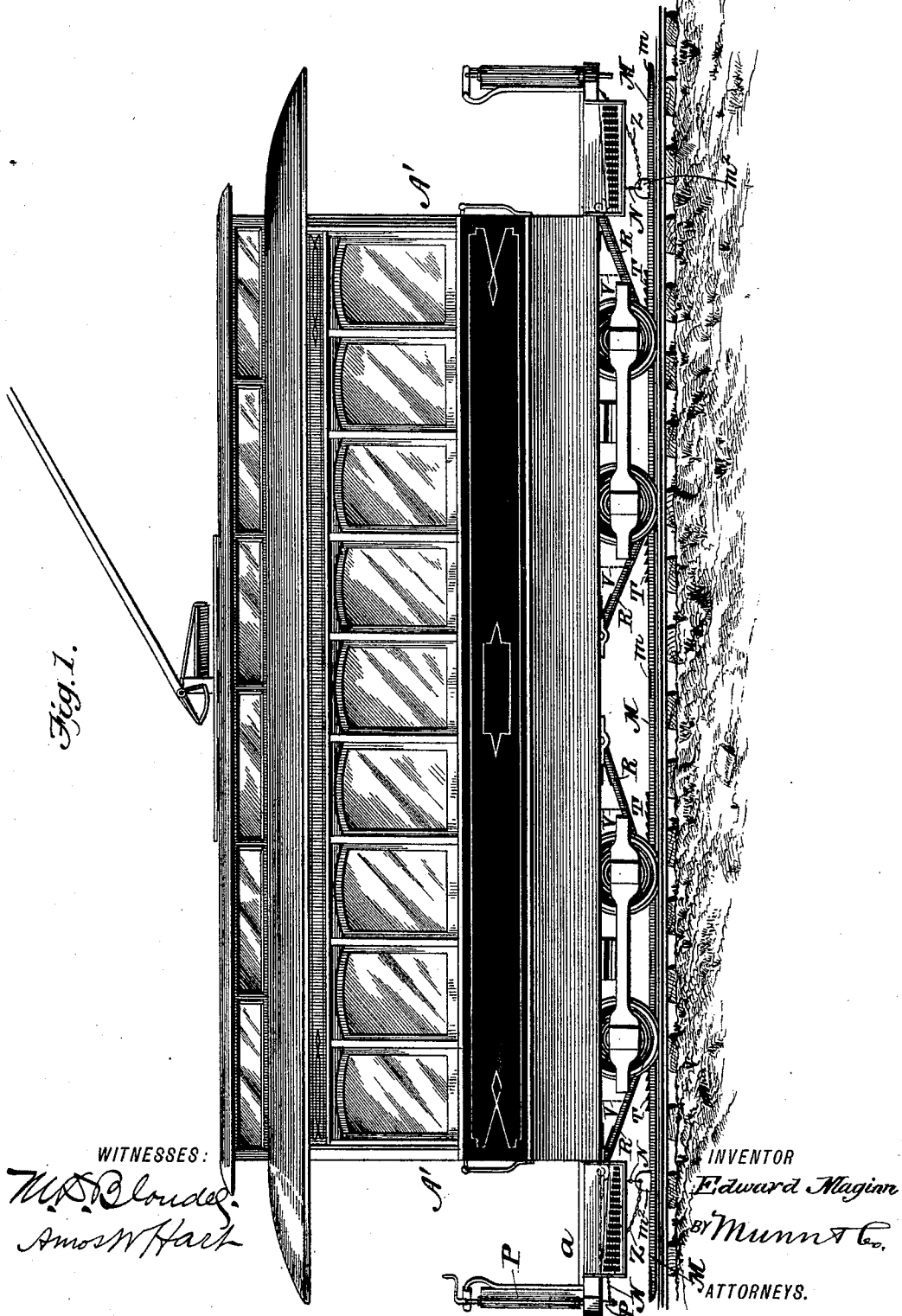
(No Model.)

2 Sheets—Sheet 1.

E. MAGINN.
APPARATUS FOR BRAKING AND STOPPING STREET CARS ON STEEP
GRADES.

No. 582,935.

Patented May 18, 1897.

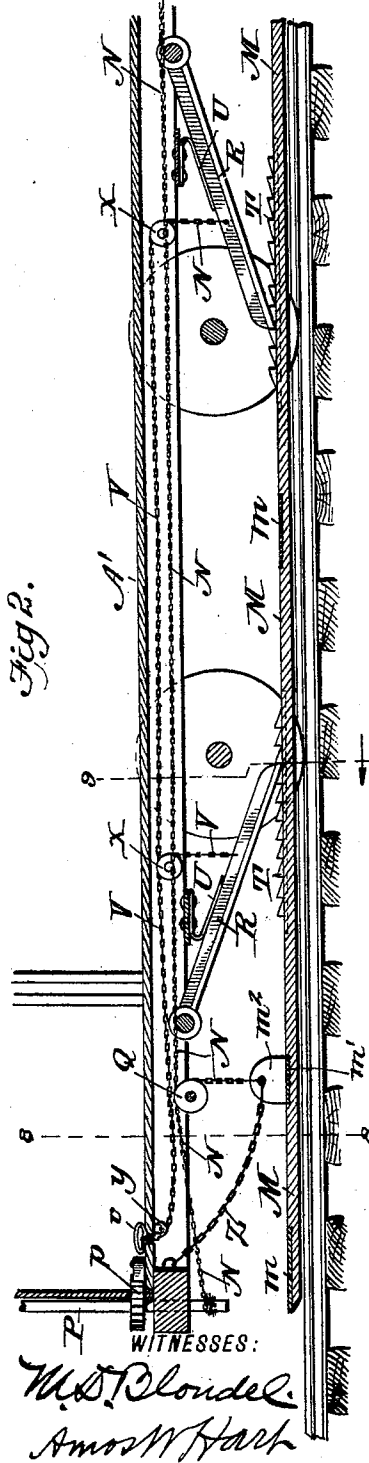


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WITNESSES:
W.D. Clouder
Amos Hark

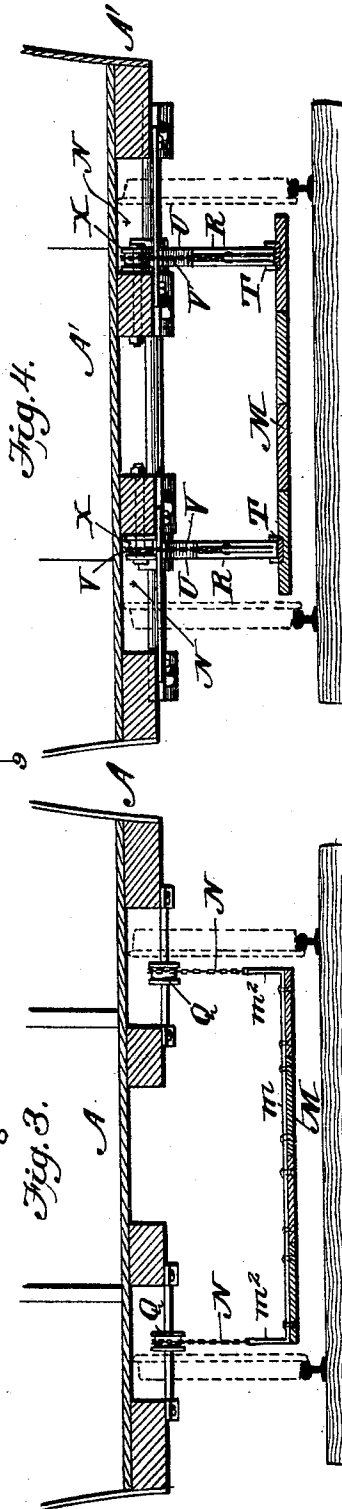


Fig. 4.

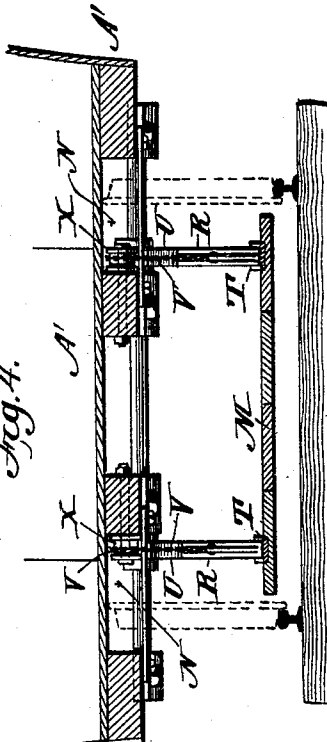
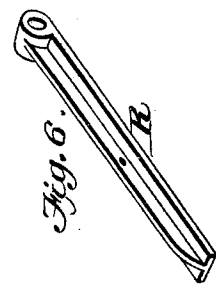
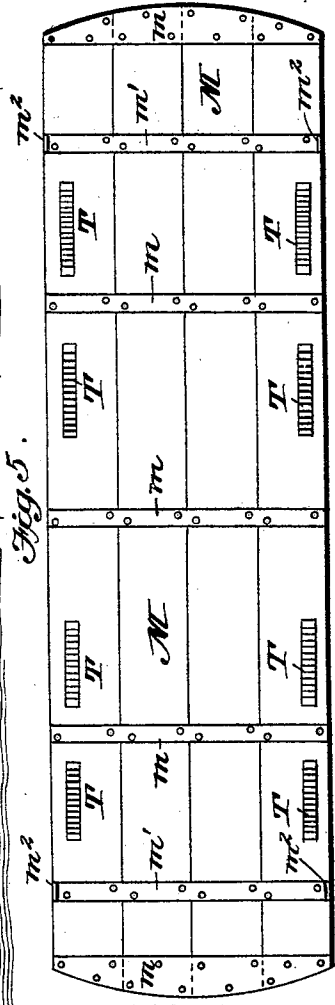


Fig. 5.



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EDWARD MAGINN, OF PITTSBURG, PENNSYLVANIA.

APPARATUS FOR BRAKING AND STOPPING STREET-CARS ON STEEP GRADES.

SPECIFICATION forming part of Letters Patent No. 582,935, dated May 18, 1897.

Application filed March 11, 1897. Serial No. 627,027. (No model.)

To all whom it may concern:

Be it known that I, EDWARD MAGINN, a citizen of the United States, and a resident of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and Improved Apparatus for Braking and Stopping Street-Cars on Steep Grades, of which the following is a specification.

In some cities—notably in Pittsburg, Pennsylvania, and San Francisco, California—there are street-railroads having very steep grades, on which the ordinary wheel-brakes have often proved utterly inadequate to arrest the cars when descending and heavily loaded, so that numerous serious accidents have occurred, involving loss of life and limb, as well as destruction of cars and other property.

It is the object of my invention to provide an efficient means for quickly arresting the motion of cars on such grades, when desired, and thus averting the terrible accidents above referred to.

To this end I have devised the apparatus hereinafter described, and shown in accompanying drawings, two sheets, in which—

Figure 1, Sheet 1, is a side view of an overhead-trolley car provided with my preferred form of braking apparatus. Fig. 2, Sheet 2, is a longitudinal section of the bottom portion of such car and of said apparatus. Fig. 3 is a vertical transverse section on line 8 8 of Fig. 2. Fig. 4 is a vertical transverse section on line 9 9 of Fig. 2. Fig. 5 is a top or plan view of the wooden shoe arranged beneath the car for contact with the street-surface. Fig. 6 is a perspective view of one of the pawls employed to lock the shoe.

Beneath the car A', I arrange, horizontally, a broad flat wooden shoe M, which is practically of nearly the same length as the car. I suspend it by means of chains N, normally a few inches from the surface of the portion of the pavement or ties lying between the rails on which the car runs. The shoe M is so constructed as to combine maximum strength and lightness, so that when lowered into frictional contact with the street-surface it will successfully resist the strain, and may be elevated and held suspended without much difficulty.

As shown in Fig. 5, the shoe M is formed

of planks connected transversely by metal bars or plates *m* and *m'*, which are so constructed as to combine strength and lightness in a high degree.

The bars *m'* are bent up at their ends to form ears *m*², which are perforated to provide for attachment of chains N, that suspend the shoe and also serve, in connection with a winding-shaft P, as means for lowering and raising said shoe. The chains N run over flanged pulleys Q and extend forward to the shaft P, and the latter is arranged vertically in the car-platform *a* and provided with a ratchet and pawl *p*, Fig. 2, as in the ordinary brake mechanism used on cars.

As automatic means for locking the shoe M when lowered upon the street-surface or ties between the rails I employ the pawls or stop-bars R, Figs. 2 and 6, which are pivoted on cross rods or shafts S, attached to the bottom of car A' and whose free ends engage ratchet-bars T, secured to the upper side of the shoe M, lengthwise thereof. The said ratchets T are arranged close to and parallel with the sides of the shoe and also sunk in grooves therein, as shown in Figs. 2 and 5. The pawls R are held normally in contact with the ratchets R by means of springs U, Fig. 2, so that when the shoe M is let fall by releasing the pawl *p* from shaft P and the latter revolve and allow the chains N to pay off the pawls R will fall at the same instant with the shoe and, sliding forward on the ratchets I, reengage the latter at new points, and thus prevent the shoe moving backward and force it to slide along with the car—that is to say, the shoe M falls upon the street-surface or rail-ties and is locked by the pawls T, the weight of the car and its load is instantly imposed on it, and so excessive friction thereby results that the car is brought immediately to a standstill.

I show, Figs. 1 and 2, two sets of pawls R, pointing in opposite directions and engaging corresponding ratchets. In the braking operation, however, it is apparent only one set of pawls is brought into action, and that is necessarily the one in which the pawls project forward or in the same direction as the car is moving. Thus if the car A' (shown in Figs. 1 and 2) be moving to the left the pawls at the rear or on the right will lock the shoe

M and sustain the powerful thrust incident thereto, while the other or forward set of pawls serves merely to hold the shoe down at its front end.

5 The shaft P and chains N serve to raise the shoe M to its original or normal position after use in the manner described, but before this can be done it is obvious the pawls R must be raised out of engagement with the ratchets

10 T. For this purpose I use small chains V, Fig. 1, which are attached to the pawls R and run over pulleys X and Y and pass up through the car-platform *a*, where they are provided with a hand-ring *r* for convenience in pulling

15 them. The ends of the shoe M are rounded, and it is intended they shall project far enough to adapt them to serve as fenders for picking up pedestrians who may fall in front of a car.

20 As shown in Figs. 1 and 2, steady-chains Z connect the shoe M with the front ends of the car-platform *a*.

With an apparatus thus constructed and adapted to be instantly brought into action 25 in the case of great emergency a car may be arrested with certainty on a steep grade, even when full of passengers, and loss of life and property thereby averted.

What I claim is—

30 1. The combination with a car, of a broad shoe arranged beneath the same and having rows of projections or teeth as specified, means for suspending and raising said shoe, and

pawls or stop-rods which are pivotally connected with the bottom of the car, and inclined toward the end of the same, their lower 35 ends resting free on the shoe, and engaging the projections thereon, as shown and described, whereby, when the shoe descends, the said rods drop with it and slide thereon and 40 lock with projections at whatever point the shoe stops, as set forth.

2. The combination, with a car, of a broad, flat, wooden shoe arranged in the space between the wheels and provided with ratchets 45 as specified, chains attached to the shoe and passing over pulleys, a rotary shaft for winding on said chains, and pivoted pawls whose free ends engage the ratchets, and are adapted to slide over and reengage the same, when 50 the shoe falls, and thus lock the shoe so that the weight of the car is imposed on it by impetus, as specified.

3. The combination with the car, of a broad flat shoe adapted for contact with the street, 55 or tie surface, and arranged beneath and parallel to the car, ratchets applied to the shoe, pawls pivoted to the car and engaging the ratchets, means for raising the shoe, and chains connected with the pawls for raising 60 them before the shoe is raised, as shown and described.

EDWARD MAGINN.

Witnesses:

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