

(No Model.)

2 Sheets—Sheet 1.

W. B. HEYWOOD.  
SAFETY FENDER FOR STREET CARS.

No. 598,067.

Patented Jan. 25, 1898.

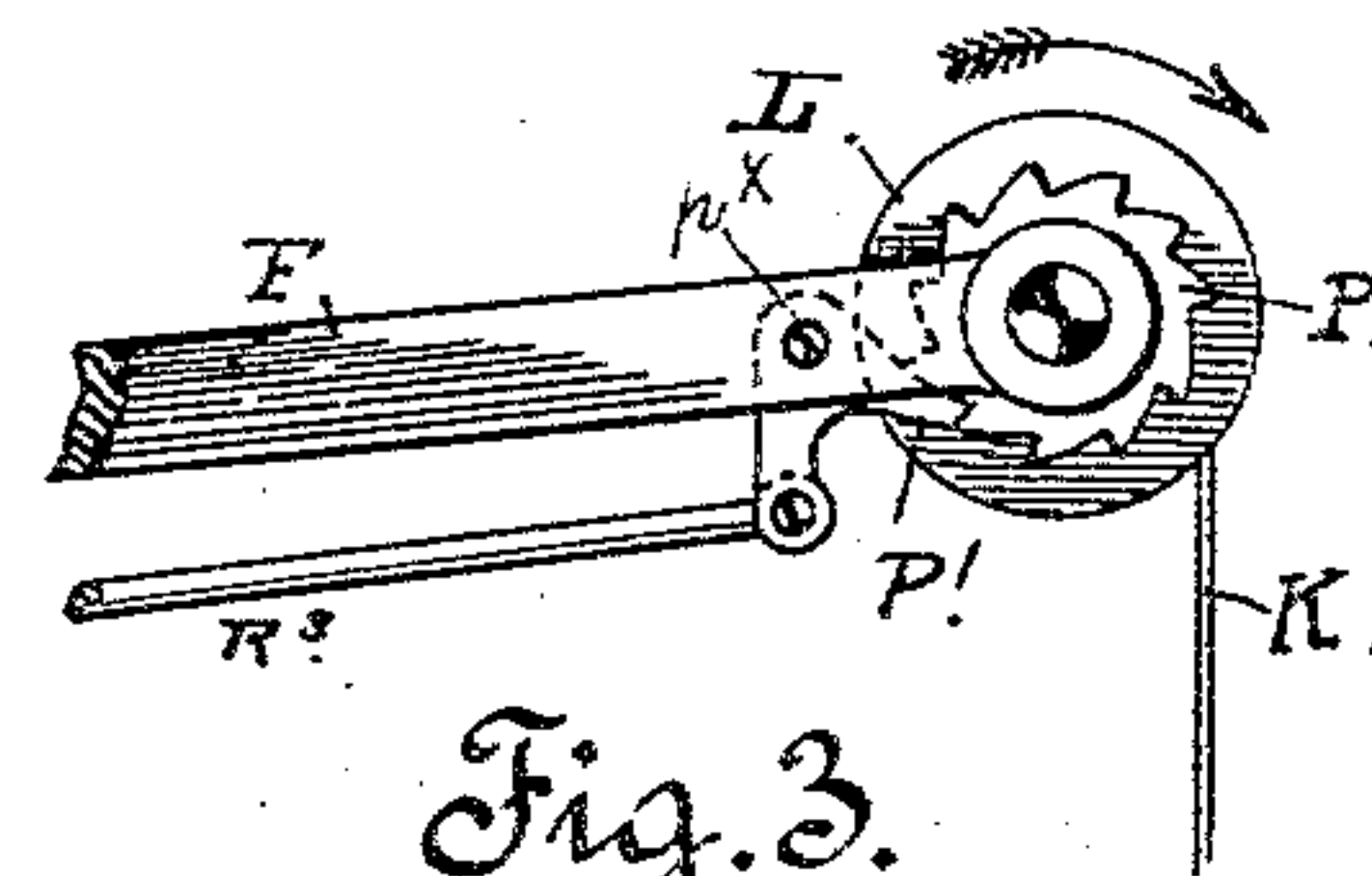
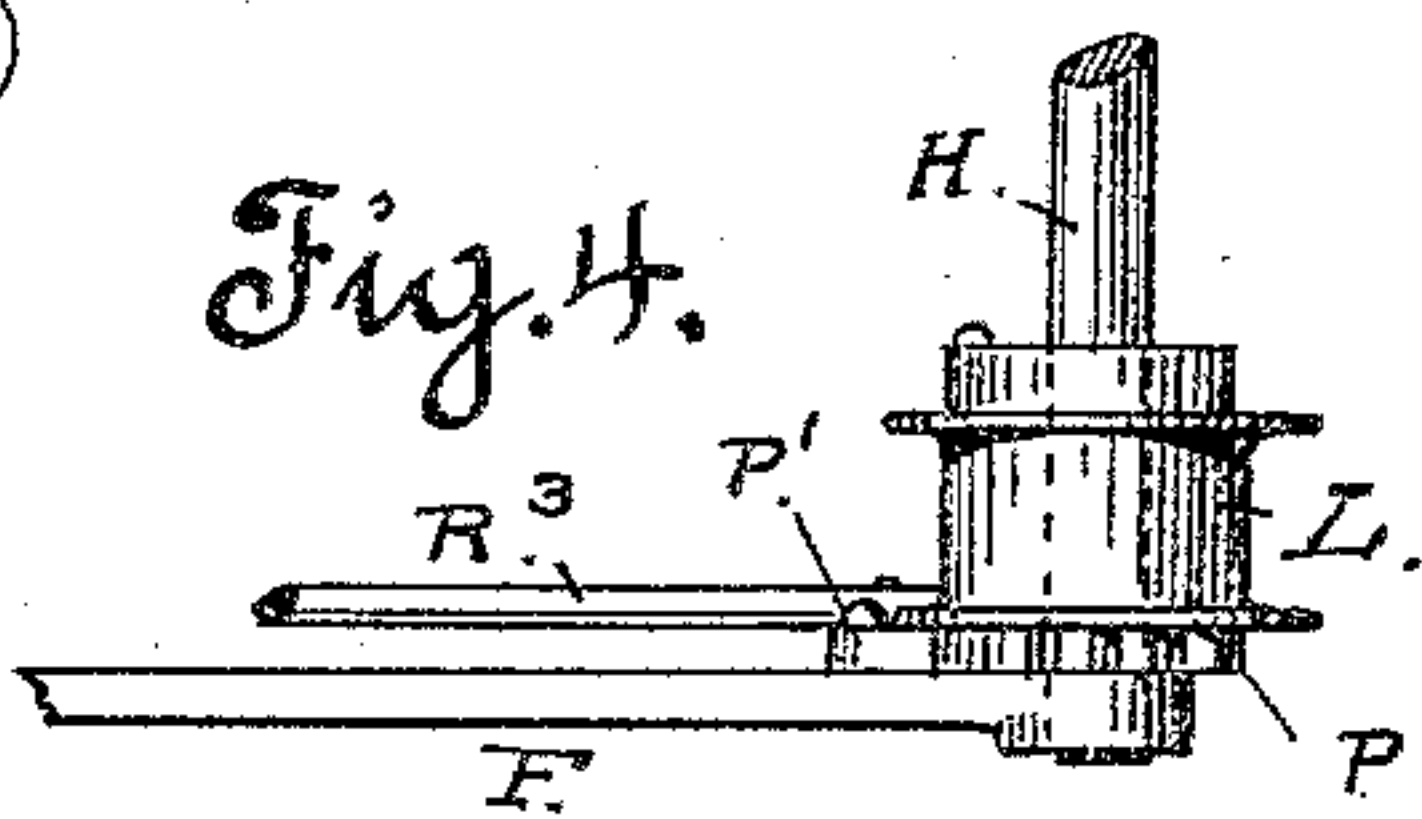
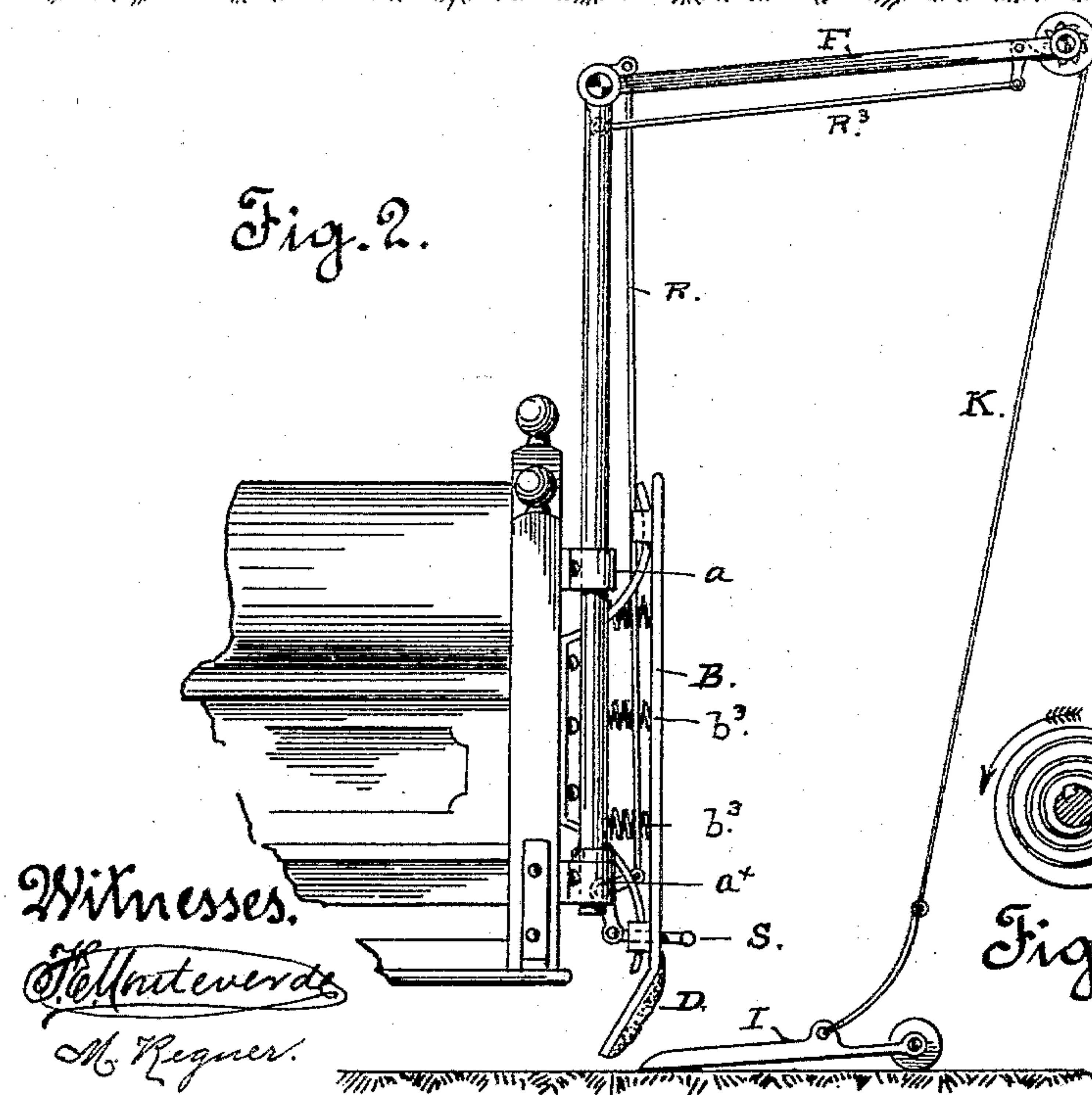
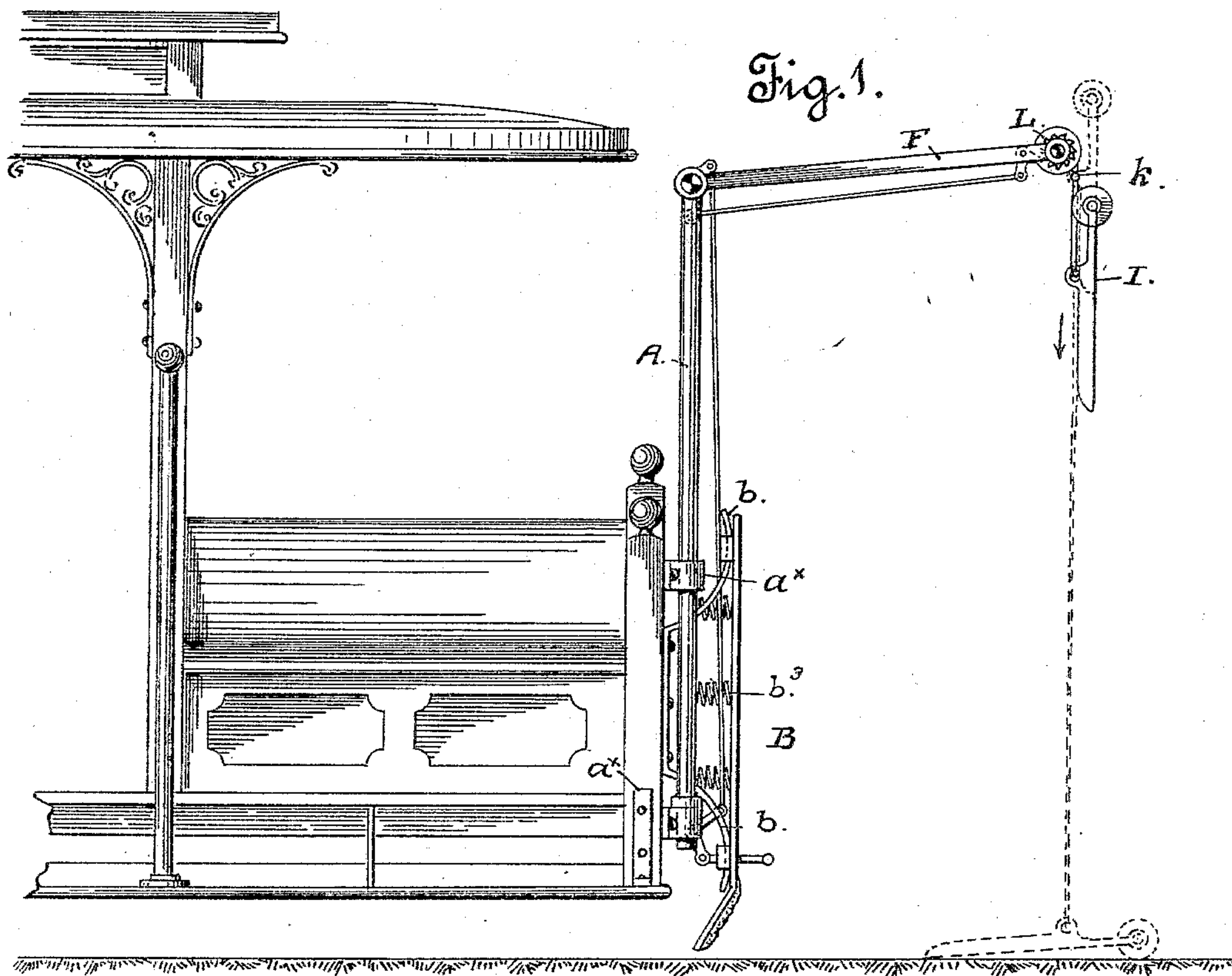


Fig. 5. Inventor.  
William B. Heywood  
Smith & Osborn  
his attys.

Witnesses.  
H. H. H. H.  
M. Regner.



(No Model.)

2 Sheets—Sheet 2.

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Fig. 6.

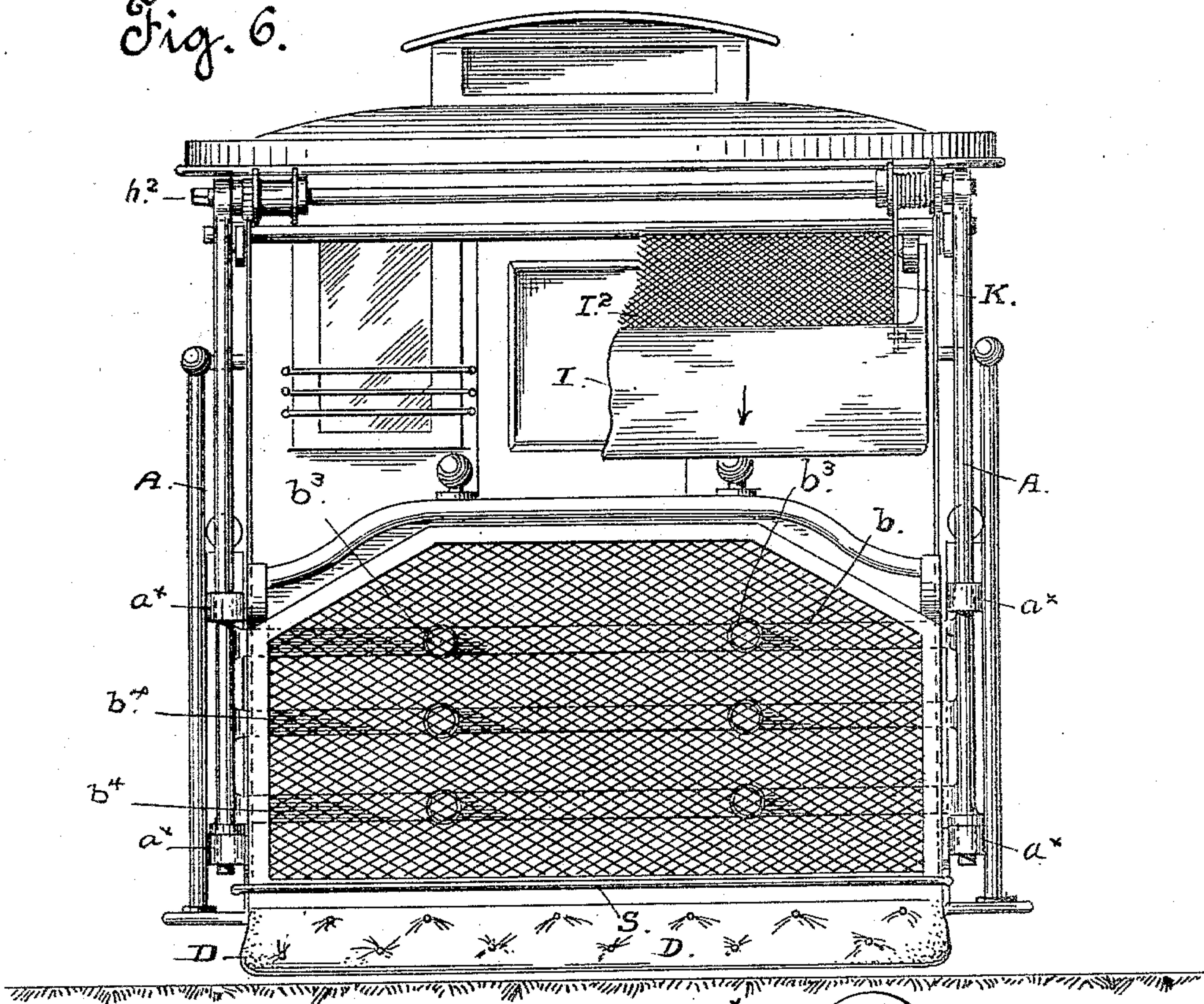
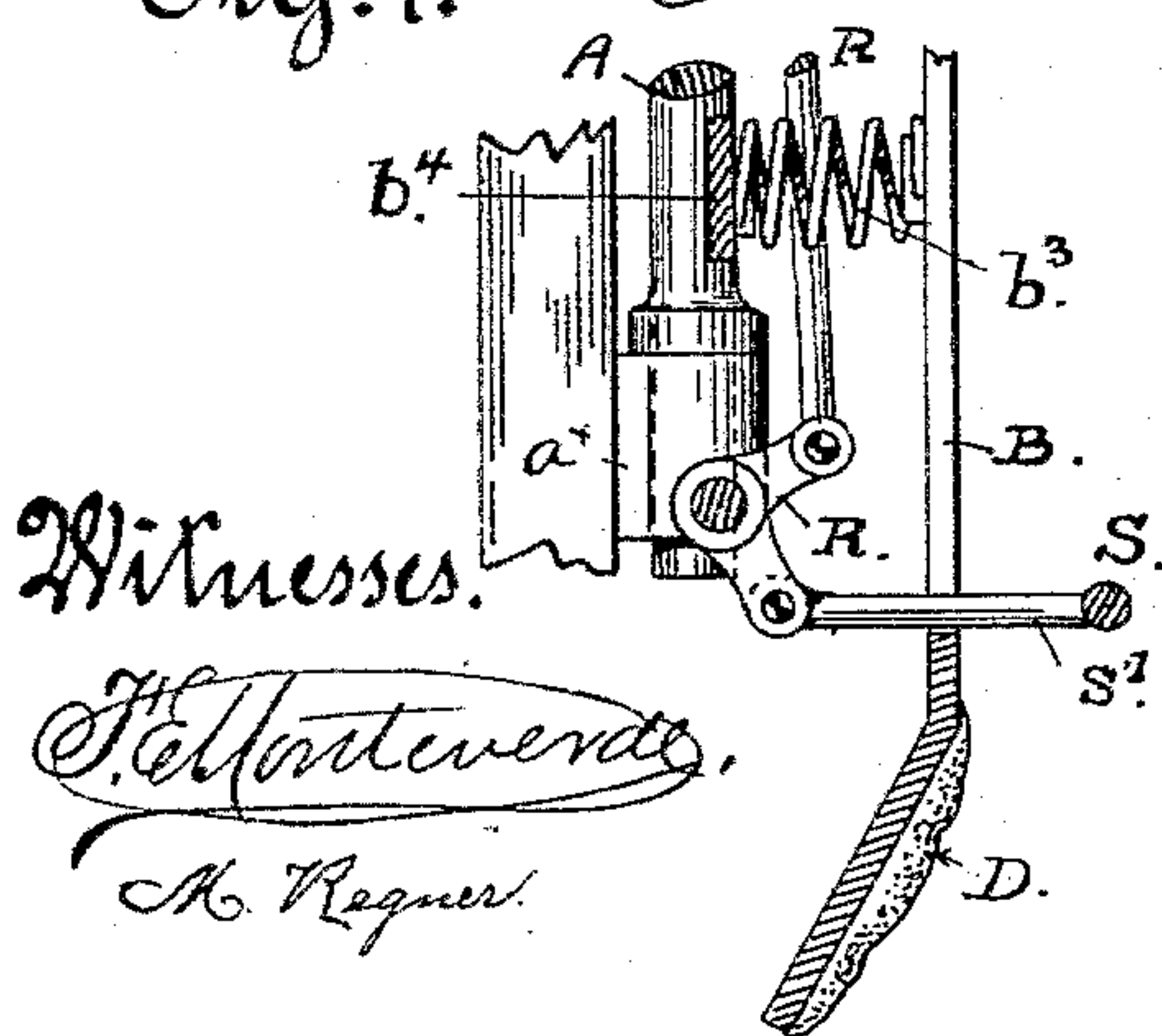


Fig. 7.



Witnesses.

*J. H. Monteverde,*

*A. Regier.*

Fig. 8.

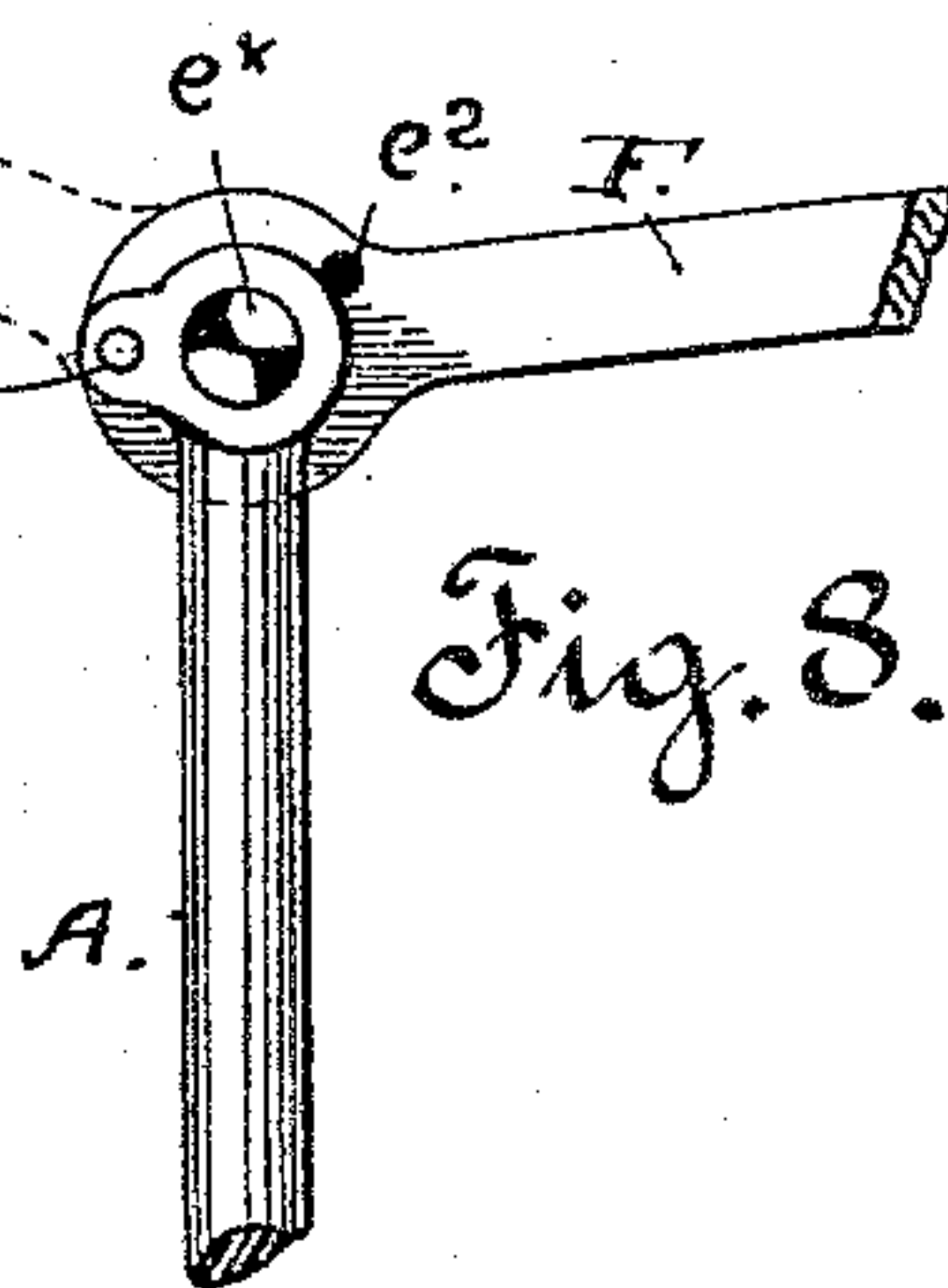
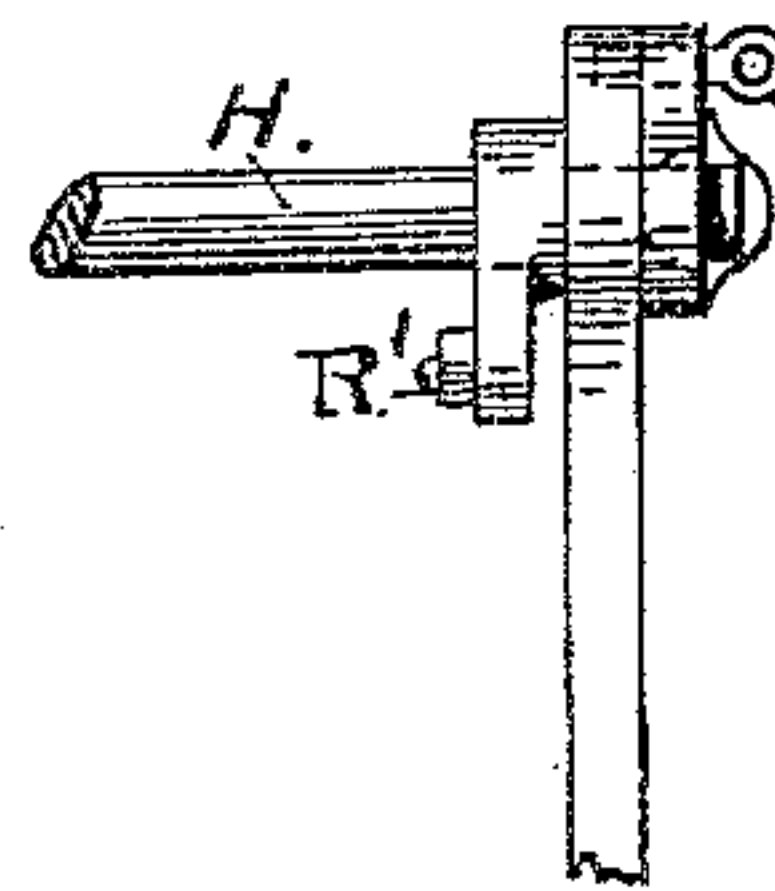


Fig. 9.



Inventor

William B. Heywood

by *Smith & Osborn,*  
his attorney



# UNITED STATES PATENT OFFICE.

WILLIAM B. HEYWOOD, OF GUALALA, CALIFORNIA.

## SAFETY-FENDER FOR STREET-CARS.

SPECIFICATION forming part of Letters Patent No. 598,067, dated January 25, 1898.

Application filed August 19, 1897. Serial No. 648,802. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM B. HEYWOOD, a citizen of the United States, residing at Gualala, in the county of Mendocino and State of California, have invented certain new and useful Improvements in Automatic Safety-Fenders for Street-Cars, of which the following is a specification.

This invention relates to a safety-fender of improved construction adapted for use on street-railway cars to prevent accident or injury to a person falling in front of the car or being struck by the fender. It is of that class or description which is designed to operate automatically by coming in contact with a person and to protect him both from the wheels of the car and from the pavement or surface of the roadway; and the improvement constituting my invention consists in certain novel parts and combination of parts, as hereinafter fully described, and pointed out in the claim at the end of this specification. The said parts and their construction and combination together for operation are shown in the drawings that accompany and form part of this specification, in which—

Figure 1 is a view of my invention in side elevation attached to the front of a street-car, showing the device in position ready to act. Fig. 2 is a similar view showing the relative positions of the parts after the device is sprung and the person is caught. Fig. 3 is a side view. Fig. 4 a top view, and Fig. 5 a cross-section at  $x\ x$  in detail and on an enlarged scale, of the spring-barrel on the winding-shaft of the drag. Fig. 6 is a front view of Fig. 1. Fig. 7 is a side elevation in detail, on an enlarged scale, of the winding-shaft and barrel and the tripping mechanism. Fig. 8 is a side view, and Fig. 9 a front view, of the joint that unites the arms carrying the winding-shaft with the uprights of the fender-frame.

The principal parts of my improved fender comprise a spring guard-frame set in an upright position across the front of the car at a suitable distance away from the dashboard to give a yielding movement backward when it comes with force against a person struck by it and to cover the draw-head when that part extends beyond the end of the car-platform,

an inclined apron on the lower end of the spring-frame, a drag-board or apron suspended above the track and some distance in advance of the spring guard-frame from an overhead shaft and adapted by its weight and assistance of a spring-barrel on the shaft to drop perpendicularly downward upon the track when released, and a tripping mechanism at the lower part of the fender-frame connected with said shaft that supports the drag-board and adapted when struck by a person falling in front of the fender to release the drag-board and allow it to drop. These parts are constructed and combined with the necessary parts and mechanism for operation as follows:

A A indicate two standards fixed in sockets  $a^x\ a^x$ , secured to the front of the car.

B is a yielding guard-frame or fender attached to the car by spring-arms  $b\ b$  to sustain a substantially upright position and stand away from the dashboard.

$b^2$  is a front of wire-netting stretched over the opening of the frame B, and  $b^3\ b^3$  are coil-springs placed at intervals apart behind the netting. These springs are attached to horizontal slats or cross-bars  $b^4$ , that are secured to the front of the car.

D is a padded shoe or apron secured to the bottom of the fender-frame and extending from that edge downward and with an inclination backward in suitably close relation to the track to cover the open space below the fender-frame for the entire distance between the wheels of the track or across the rails. This apron has no movement except a slight yielding one in an upward direction, which is due to its angular position and its being carried on the lower part of the fender-frame.

F F are arms attached by hinge-joints to the upper ends of the standards and extending forward in substantially a horizontal direction in front of the car-platform to furnish supports for a winding-shaft. Bearings  $h$  on the outer ends of the arms are provided for a horizontal winding-shaft H, from which is suspended the part I, which I have termed herein the "drag-board."

K K are chains or straps attached to the drag I at  $k^x$  and to spring-barrels L L on the shaft H. The function of the spring L is to



accelerate the downward movement of the drag I and cause it to drop rapidly when released.

The shaft H is provided with a square end  $h^2$  to take a hand-crank for winding up the straps and setting the drag I in elevated position for action. This part I is composed of a board or solid portion extending across the space between the two uprights and in length equal to the inclined apron on the bottom of the fender-frame, and above the solid or closed portion a wide band or strip of wire-netting  $I^2$  covers the opening between the suspending-chains K. On the upper or front ends of the board are rollers  $m m$ , that come in contact with the surface of the roadway and hold up the front end of the drag I when it is dropped.

P is a ratchet-wheel, and P' a pawl or dog pivoted at  $p^x$  on the arm and locking the shaft H. This dog is connected with a horizontal push-bar S, that extends across the front of the fender-frame in advance of the frame, the connection being made by a bell-crank R on each side of the frame at the bottom of the fender, a bell-crank R' at the joint where the arm F is attached to the uprights A, and the rods  $R^2 R^3$ , connecting the bell-cranks together. When the push-bar S is operated to draw the dog away from the ratchet-wheel and release the drag I, a spring-detent  $t$ , arranged in the arm F, acts to hold back the dog and allow the drag to drop. The push-bar S is attached to the bell-cranks R by rods  $S' S'$ , that play through holes or guide-slots in the bottom of the fender-frame. The arms F are united to the uprights by center bolts  $e^x$ , so as to be turned upward and backward or downward against the front of the fender when the fender is not in use or the car is to be housed. A rigid joint is obtained at other times by providing a hole  $e^2$  in one part of the joint and a locking-pin  $e^3$  on the other part. The construction and operation of these parts will be clearly understood from the detail figures of the drawings.

As thus constructed the said parts composing the fender are designed to operate as

follows: The drag I being raised to its elevated position, as indicated by the full lines in Fig. 1, it is held at that point by the locking-dogs, and in such position it is carried along in advance of the car and at such height above the track that it will clear the head of a person standing on the track. In this elevated position the drag is above and in front of the person who falls in front of and is struck by the fender, and at the moment of its release the drag is dropped to the track and into a position on the surface of the roadway where it will be brought directly under the body of the falling person by the impetus or continued movement of the car before the brakes bring it to a standstill. At such time the drag is interposed between the body of the person and the surface of the road, and the individual is caught and carried along between the padded apron at the bottom of the fender and the drag running on the surface.

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

In a car-fender the combination, of a spring guard-frame; a supporting means to hold it in position across the front of the car; an inclined apron on the bottom of said guard-frame; a horizontal winding-shaft supported in a position over and in advance of the guard-frame; a drag-board or rigid apron suspended from said shaft by straps or chains; means for winding up said suspension-chains; a spring on said shaft acting to unwind the chains and accelerate the descent of the drag; a locking device adapted to hold the shaft stationary when wound up, and a tripping mechanism consisting of a tripping-bar projecting in front of the guard-frame, and means connecting said bar with the locking device, substantially as described for operation as set forth.

In testimony that I claim the foregoing I have hereunto set my hand.

WILLIAM B. HEYWOOD.

Witnesses:

EDWARD E. OSBORN,  
CHAS. E. KELLY.