

(No Model.)

4 Sheets—Sheet 1.

G. HIPWOOD.
CAR FENDER.

No. 596,592.

Patented Jan. 4, 1898.

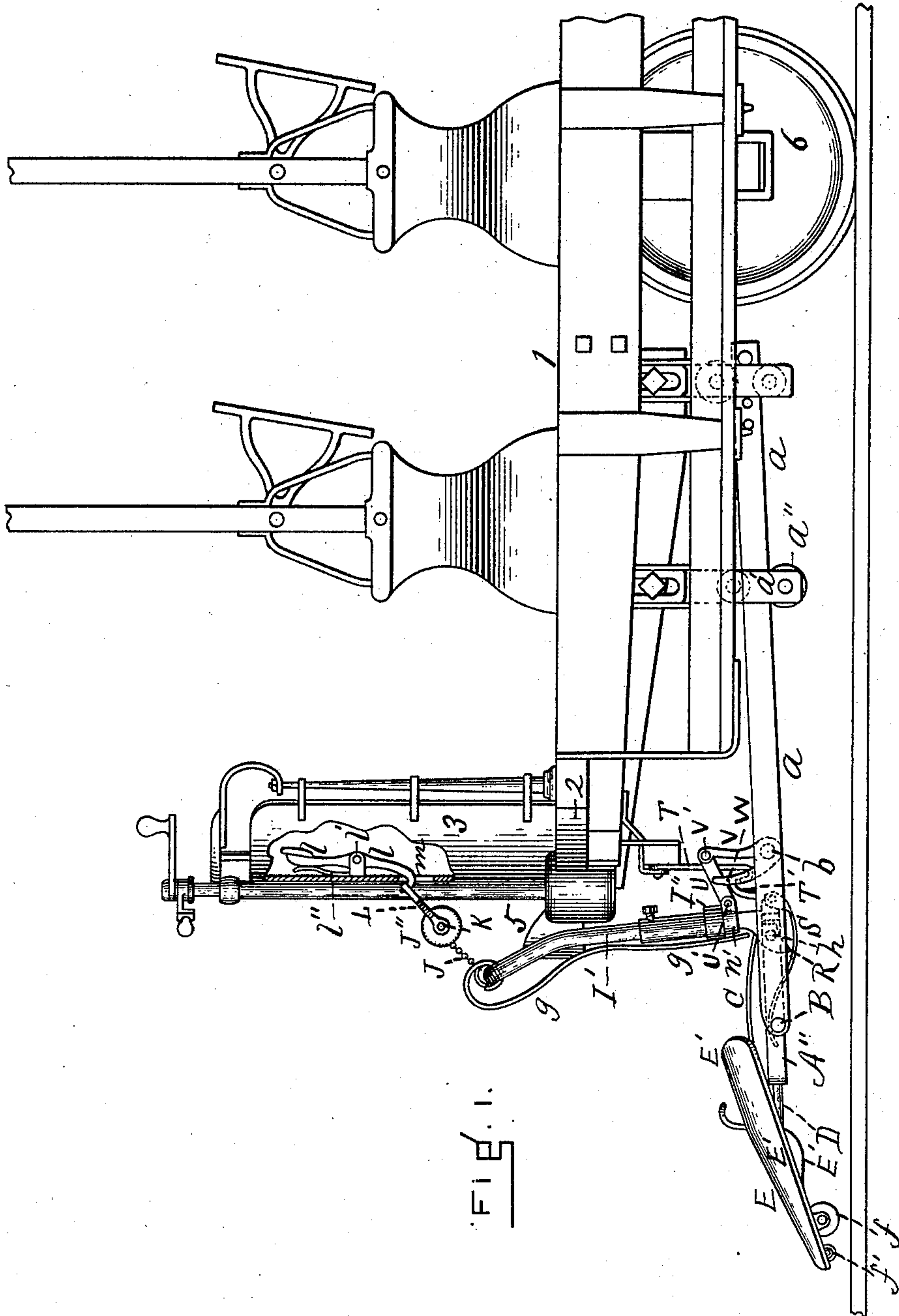


FIG. 1.

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A. G. Poncey.

INVENTOR:
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By his Att'y.
Henry Williams.

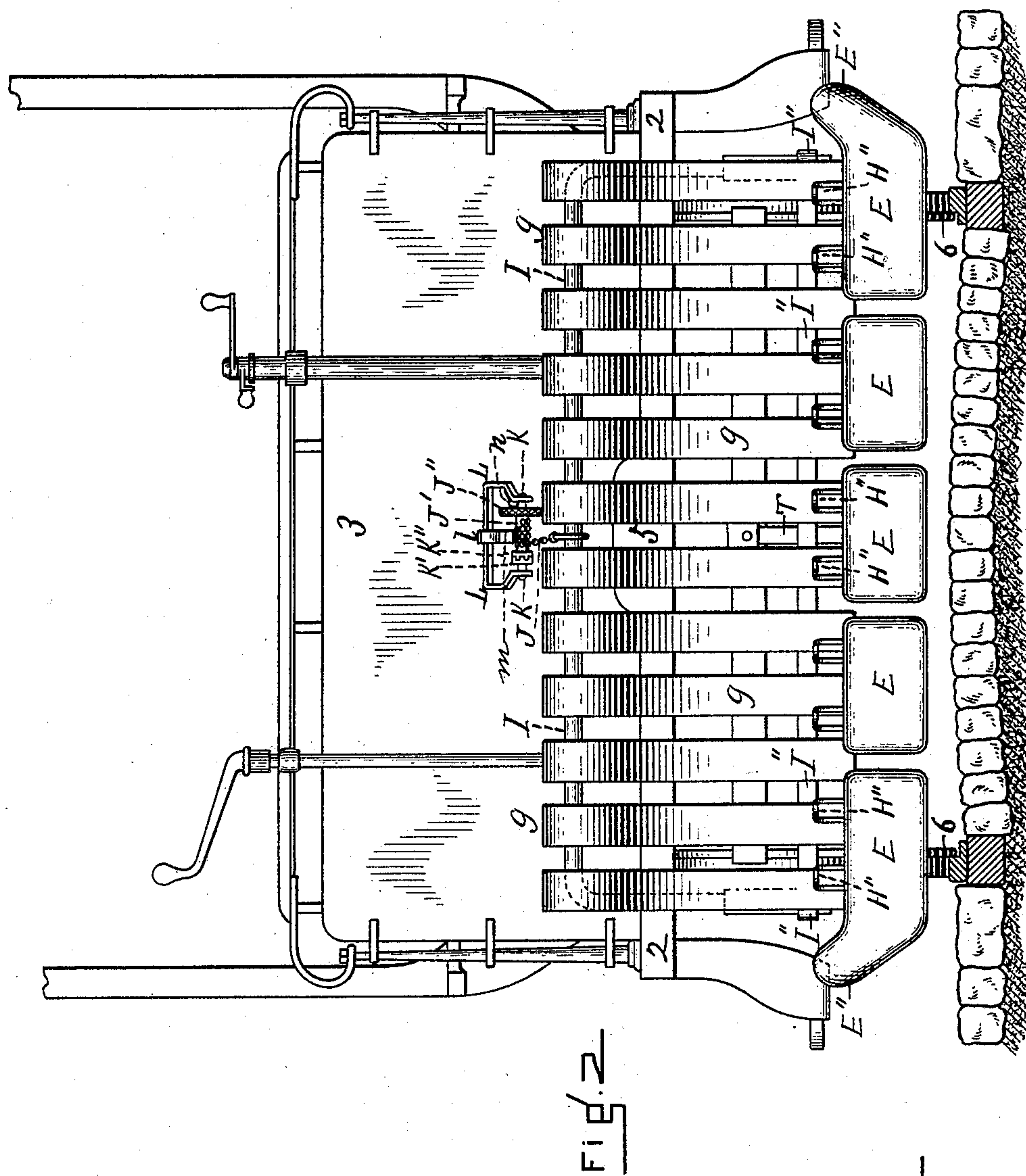
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WITNESSES:

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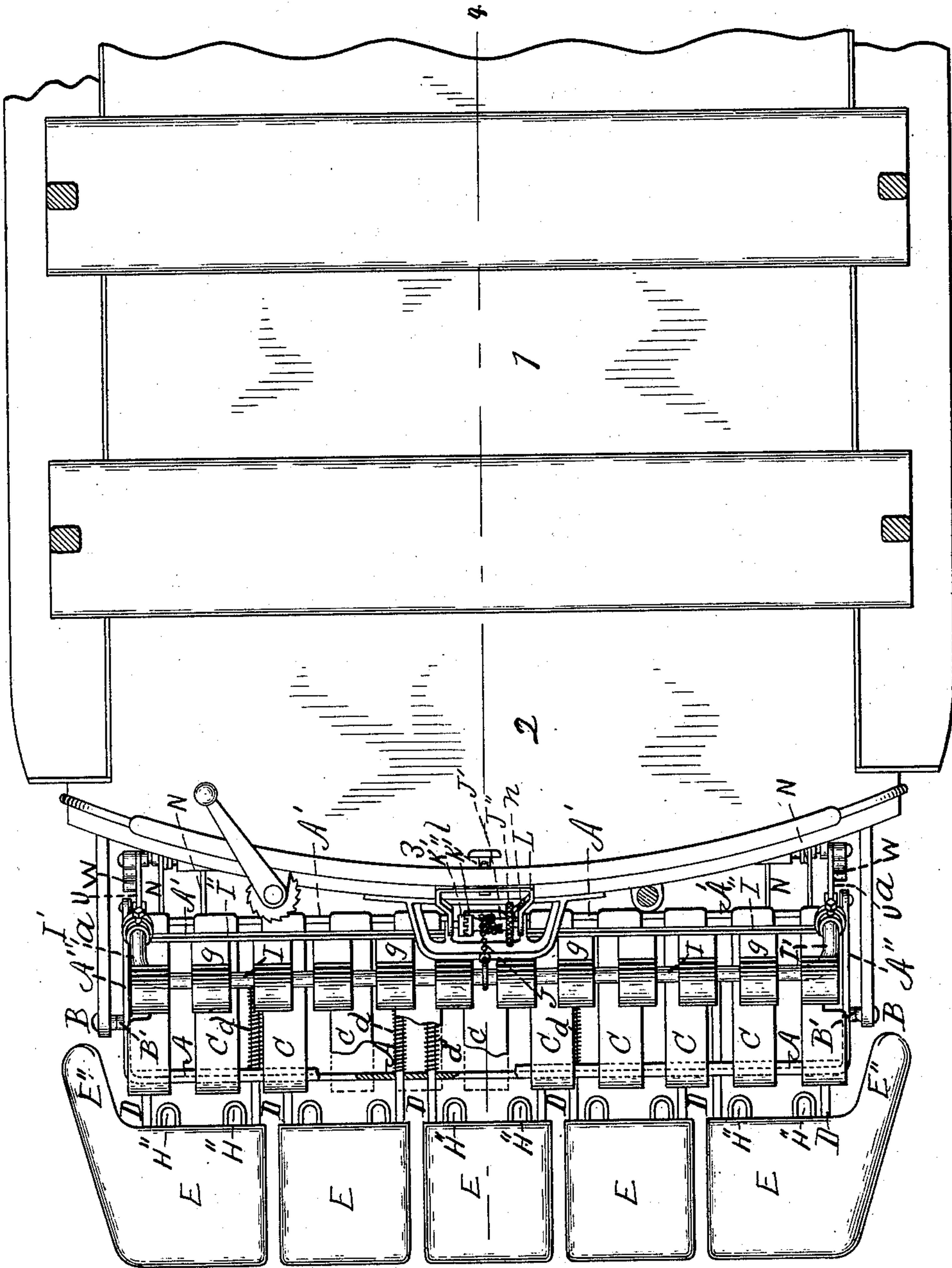
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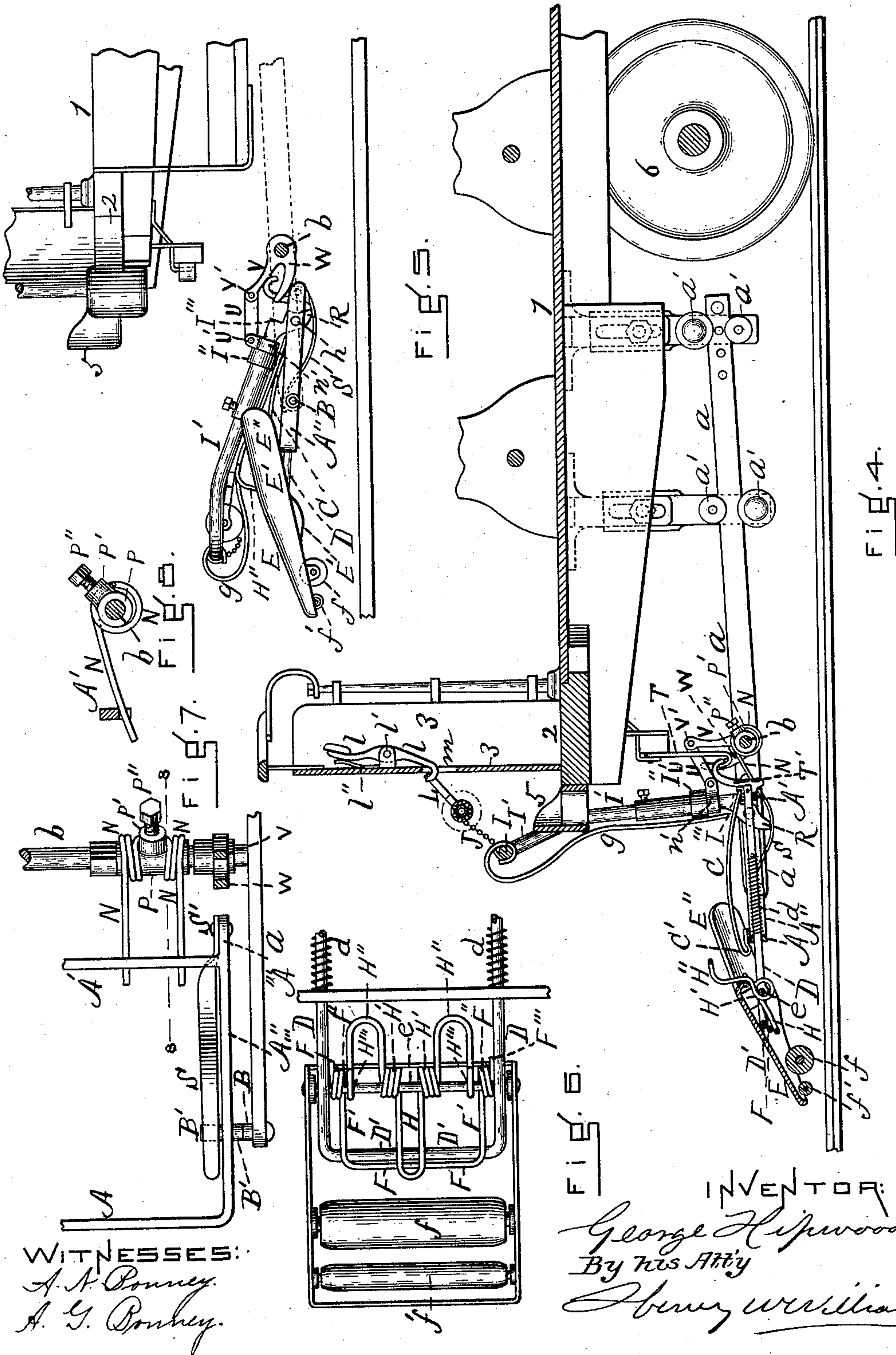
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4 Sheets—Sheet 4.

G. HIPWOOD.
CAR FENDER.

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UNITED STATES PATENT OFFICE.

GEORGE HIPWOOD, OF BOSTON, MASSACHUSETTS.

CAR-FENDER.

SPECIFICATION forming part of Letters Patent No. 596,592, dated January 4, 1898.

Application filed May 5, 1897. Serial No. 635,160. (No model.)

To all whom it may concern:

Be it known that I, GEORGE HIPWOOD, a citizen of the United States, residing in Boston, in the county of Suffolk and State of Massachusetts, have invented new and useful Improvements in Car-Fenders, of which the following is a specification.

This invention relates to car-fenders adapted particularly for use on street-cars propelled by electricity, cable, or other power; and it relates more especially to the general style or class of fender illustrated and described in Letters Patent of the United States granted October 31, 1893, and numbered 507,655, and granted April 13, 1897, and numbered 580,549, to which reference is made. My present invention is intended to be an improvement over and upon the inventions described in said Letters Patent; and it consists in an improved mechanism whereby the forward ends of the shoes are prevented from being tipped up by the weight of a person falling on or being transferred to their inner or upper ends, thereby affording opportunity for a hand, arm, or limb to get under the front end of the shoe; an improved means for holding the front edge of the fender down upon the track with a desired pressure; mechanism whereby swinging or folding down the bunter-guard lifts the forward edge of the fender proper, so that both it and the bunter-guard may be slid under the car; mechanism for adjusting the height of the fender or distance thereof from the track and for accommodating the fender to platforms of different heights; means for adapting the fender to different cars, so that its supports will clear the car-wheels made of different gages of track, and other combinations and arrangements of mechanism, all as fully described below and illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of my improved fender applied to a car, a portion of the dashboard being represented as broken out and the fender being extended for use but not dropped onto the track. Fig. 2 is a front elevation of the same. Fig. 3 is a plan view of the same, portions of some of the springs being represented as broken out. Fig. 4 is a longitudinal vertical section taken on line 4, Fig. 3. Fig. 5 is a side or edge view of the

fender with the bunter-guard folded upon the fender proper, thereby raising it from the track preparatory to pushing it under the car. In this figure the rod connecting the fender with the sliding supports is shown in section and a portion of the car-platform is exhibited in elevation. Fig. 6 is a relatively-enlarged view in detail of the under side of one of the shoes and the spring mechanism connected therewith. Fig. 7 is a plan view in detail illustrating the adjustable mechanism for pressing the front edge of the fender upon the track. Fig. 8 is a sectional detail taken on line 8, Fig. 7.

Similar letters and figures of reference indicate corresponding parts.

a a represent parallel side bars supported by and sliding horizontally in the hangers *a'*, provided with suitable antifriction-rollers *a''*, said hangers being supported by and depending from the under side of the car-body 1, provided with the usual platform 2 and dashboard 3. 5 is the bunter. These side bars are connected at a point some distance from their front ends by a horizontal rod *b*.

A A' represent the horizontal parallel front and rear bars, and *A'' A''* the end bars, constituting a rectangular frame tilting on and between the front ends of the bars *a*. The connection between the bars *a* and this frame consists of two horizontal pins *B*, which extend inward from the bars *a* into tubular sockets *B'*, Figs. 3 and 7, said tubular sockets extending through the end bars *A''*. Thus the pivotal connections between the rectangular frame and the supporting-bars *a* are telescopic ones, and hence said bars *a* and the hangers *a'* may be set nearer or farther from the wheels 6 in order to allow the turning of the trucks thereof upon different curves or to allow for different gages of track by sliding the pivots *B* in the tubular sockets *B'*.

C C are springs made, preferably, of sheet metal and secured at one end to the upper surface of the front bar *A*, from which point they extend forward and thence upward and rearward, as shown at *C'* in Fig. 4, to the rear bar *A'*, upon which their rear free ends rest. These flat springs are somewhat higher midway between the bars and are numerous enough to sufficiently occupy the space between said bars, so as to prevent any person

falling through the rectangular tilting frame. Moreover, they are sufficiently light and broad to ease the fall of a person thrown upon the fender and prevent injury to him, and as their rear ends are free they have no tendency to cause the person falling upon them to rebound, but rather yield and sag with the weight of the person.

D D' are U-shaped rods sliding horizontally in the bars A A' and with their closed ends D' extending forward therefrom and held normally in such position by the spiral springs *d*, all substantially as indicated in Letters Patent No. 580,549 above referred to. As in the last-named Letters Patent, a shoe E is pivoted by means of a horizontal rod *e* to each U-shaped rod D, said rod *e* extending through the parallel portions of the rod D and the sides E' of the shoe E. In my present improvement, however, the shoes are made shorter than before and are pivoted close to their rear ends. This is in order that a body falling or rolling upon the rear end of a shoe may not tip up the front end and thereby risk an arm, hand, or foot being drawn under the fender by catching under the front edge of the shoe. The spring which holds the front edge of the shoe normally down consists of a U-shaped wire whose central portion F bears against the under side of the portion D'. Thence the wire is bent into the parallel portions F', which coil around the rod *e* at F'', the ends F''' bearing against the under side of the rear edge of the shoe, all as shown in Fig. 6. Thus by this means the shoe is held normally down. In order, however, to substantially fill the space between the rear edges of the shoes and the front of the rectangular frame, I provide a pair of springs which extend to the rear of each shoe. To produce these springs, I bend a wire into three loops or U-shaped portions. The central portion of the wire is formed into the U shape H, (see Fig. 6,) from which it is coiled at H' around the rod *e*, and is thence bent into the U-shaped loops or springs H'', the opposite ends of this wire being caught at H''' around the rod *e* and the whole wire being located between the two coiled ends F''' of the wire F. Thus the loops H'' produce two springs at the rear of each shoe, said springs being absolutely independent of the shoes. Hence if a body falling on the fender drops or is thrown to the rear of the shoes or to the rear of the rods *e* it is received by the springs, which, being absolutely independent of the shoes, will not cause the front edges of the shoes to be lifted from the ground and catch or draw any part of the body or clothing under the fender. These springs H'' are curved as a whole rearward into the shape indicated in Figs. 1, 2, and 4, so as to successfully bridge the space between the shoes and the rectangular frame of the fender, and are held yielding in such position by the U-shaped portion H underlapping and bearing against the portion F of the U-shaped springs

F F'. The outer or end shoes are preferably provided with the rearward extensions E'', whose object is to throw or push an obstruction to one side of the track. Suitable rollers *f f'*, not new in this invention, are furnished each shoe.

The bunter-guard consists of the rectangular frame I I' I'', provided with the vertically-arranged springs *g* for receiving an object thrown or falling against the guard without injury thereto. The lower ends of the end portions I', Figs. 1, 3, 4, and 5, are hinged at *h* to the end bars A'' of the rectangular frame, and shoulders I''' are formed on the portions I', such shoulders resting on the rear bar A' of said frame. A chain J has its lower end secured to the upper bar I of the bunter-guard, and thence extends up to, around, and is secured to a drum J', which has fast on it a wheel J''. This drum is a sleeve, which slides longitudinally upon a spindle K, which has its bearings in the stirrup L. The two halves K' K'' of an ordinary clutch are rigidly secured to the spindle K and drum J', respectively, and are held normally in engagement by a suitable spring *n*, which bears against the wheel J''. By means of the wheel J'' the drum J' may be moved so that the two halves of the clutch are out of engagement and then rotated so as to wind or unwind the chain and shorten or lengthen it as desired. The stirrup L catches upon the lower end of the hook *l*, Figs. 1, 2, and 4, which is pivoted at *l'* to the inner or rear side of the dashboard and is held normally by the spring *l''* with its hook end projecting through the opening *m* in the dashboard. By this means the bunter-guard is held sufficiently vertical to keep the main portion of the fender with its front edge slightly off the ground, the shoulders I''' pressing down upon the rear bar A'. By means of the clutch mechanism above described the chain J is lengthened or shortened with the effect of dropping or raising the front edges of the shoes E. Thus the height of the fender from the ground may be regulated to suit the inequalities of the road which the car travels over, and also the fender may be adapted to platforms of different heights.

Secured to the cross-bar *b* are two or more springs N, Figs. 3, 4, 7, and 8. These springs consist of stiff wires coiled around sleeves P upon the cross-bar *b*, which is round in shape. Each of these sleeves is provided with a tubular radial extension P', internally threaded to receive a set-screw P''. The central portion of this wire passes around the extension P', and the ends extend under the rear bar A' of the rectangular frame of the fender. As will readily be seen, the ends of the springs apply upward pressure to the rear portion of the fender-frame, and this pressure may be rendered greater or less by loosening the set-screws P'' and turning the sleeves on the rod *b*. In case of an obstruction appearing on the track the driver or motorman presses with

his knee the upper end of the lever *l*, thus causing its hooked lower end to release the stirrup *L*. The springs *N* then tilt up the rear edge of the fender and bring the front edge upon the track, the amount of power or force being regulated, as above indicated, by the springs *P* and set-screws *P'*.

The bunter-guard is held normally in its vertical position by means of the extensions or feet *R*, Figs. 4 and 5, each of which projects forward and downward against a spring *S*, which is secured at its rear end at *S'* to the rearward extension *A'''* of the side bar *A''*, as shown in Fig. 7. One of these springs is secured to the inner side of each of the two extensions *A'''* integral with the side bars *A''*, and thence extends forward and bears upon the upper sides of the tubes or sockets *B'*, above described. The pressure of these springs upon the feet *R* holds the bunter-guard in a substantially vertical position after the fender has been dropped to the track by the motorman.

When it is desired to slide the fender under the car, the bunter-guard is swung or folded down against the power of the springs *S* and is held in such horizontal position, as shown in Fig. 5, by said springs. As the power of the springs *N* is usually very great and as the front edge of the fender is held down by said springs, as soon as the bunter-guard is released it is desirable that there should be some means of easily tilting up the front portion of the fender, so that it may be in a substantially horizontal position before it is pushed back under the car. This is produced automatically by means of two jointed levers connecting the rod or cross-bar *b* with the end bars *I'*. (See Figs. 1, 3, 4, and 5.) Each of these levers consists of the two portions *U* and *V*, the former being pivotally connected at *U'* with a suitable clamp *n'*, rigid on the end bar *I'* and the latter being pivoted at *V'* to the former and having its rear end loose on the rod or cross-bar *b*. Extending from the hub of the portion *V* below said portion is a horn or cam *W*, which projects directly over the extension *A'''* of the end bar *I'*. When the bunter-guard is folded down into the position indicated in Fig. 5, these cams or horns *W* strike and bear down the extensions *A'''*, and thus tilt up the front edge of the fender into the position indicated in Fig. 5, so that it is ready to be slid under the car. This is easily accomplished, as the natural portion to be grasped in swinging down the bunter-guard is the bar *I*, and thus a powerful leverage is obtained.

Of course the disengagement of the hook *T* from the hook *T'* by swinging the former up is necessary before the fender can be pushed back. This feature, however, is not new in this improvement.

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

1. In a fender, a fender-frame; supports

extending substantially horizontally forward from said frame; shoes, as *E*, pivotally sustained near their rear ends by said supports; and springs extending from the horizontal rods upon which said shoes are pivoted rearward toward said frame, said springs working independently of the shoes and substantially bridging the space between the rear ends of the shoes and the front edge of the fender-frame, substantially as described.

2. In a fender, the fender-frame; supports extending substantially horizontally forward from said frame; a series of horizontal rods set at right angles to and sustained by said supports; the shoes *E* pivotally secured near their rear ends to said rods; the springs *F F'* extending forward from said rods, coiled around the same and with their ends bearing against the rear portions of the under side of the shoes; and the springs *H, H', H''*, coiled around said rods, formed with the loops *H'''* which extend forward under and bear against the under side of the portion *F* of the springs *F F'*, and with the loops *H'''* extending rearward and upward and curved to substantially bridge the space between the rear ends of the shoes and the front edge of the fender-frame, substantially as set forth.

3. In a fender, the substantially horizontal fender-frame; shoes extending forward therefrom; the horizontal supports *a* pivotally connected at their forward ends with said fender-frame and supported at their rear ends by the car-body; a horizontal rod connecting said supports at the rear of the fender-frame; the tubes or sleeves *P* loose on said rod; means for adjusting and setting said tubes rotatively on said rod; and springs extending from said tubes to and under the rear portion of the fender-frame, substantially as described.

4. In a fender, the substantially horizontal fender-frame; shoes extending forward therefrom; the horizontal supports *a* pivotally connected at their forward ends with said fender-frame and supported at their rear ends by the car-body; a horizontal rod connecting said supports at the rear of the fender-frame; the tubes or sleeves *P* loose on said rod and provided with the tubular extensions *P'*; means for adjusting and setting said tubes rotatively on said rod; and the springs *N* extending partially around the rear side of the said tubular extensions, thence disposed around the tubes and extending under the rear portion of the fender-frame, substantially as set forth.

5. In a fender, the substantially horizontal fender-frame provided with the rearward horizontal extensions *A'''*; the bunter-guard hinged to the fender-frame and adapted to swing vertically with relation thereto; a substantially horizontal supporting-frame adapted to slide under the car and being pivotally connected at its forward ends with the fender-frame; jointed levers connecting the bunter-guard with the sliding frame; and cams extending forward from said jointed le-

vers toward said extensions A''', whereby swinging down the bunter-guard brings said cams into engagement with the extensions A''' and tilts up the front end of the fender so that it may be slid under the car, substantially as described.

6. In a fender, the substantially horizontal fender-frame provided with the rearward horizontal extensions A'''; the bunter-guard hinged to the fender-frame and adapted to swing vertically with relation thereto; the supporting-bars *a* sliding under the car and pivotally sustaining the fender-frame at their forward ends; the cross-rod *b*; the jointed levers U, V pivotally secured at their opposite ends to said cross-rod and the end bars of the bunter-guard; and the curved horns or cams W integral with the portions V of the jointed levers and extending forward and upward therefrom, whereby swinging down the bunter-guard brings said cams into engagement with the extensions A''' and tilts up the front end of the fender, substantially as set forth.

7. In a fender comprising a substantially horizontal frame and a substantially vertical bunter-guard hinged to and extending up from said fender-frame; the combination of said bunter-guard; the car-body provided with a dashboard having the opening *m* therein; the trip-lever *l* pivotally secured to the inner surface of the dashboard and with its lower end formed into hook shape and extending

through said opening; the stirrup L adapted to catch upon the hooked end of said lever; a drum supported by said stirrup and adapted by means of a clutch to be rotated or held in stationary position; and a chain secured at its opposite ends to said drum and the bunter-guard, substantially as described.

8. In a fender, in combination, the supporting-bars *a* sliding under the car; the tilting fender-frame A, A', A'' provided with the tubular sockets B' extending horizontally from its end bars; and the pin B extending inwardly from the forward ends of the bars A into said tubular sockets whereby said bars A may be moved laterally with relation to the fender-frame, substantially as set forth.

9. In a fender, the substantially horizontal fender-frame A, A', A''; the substantially vertical bunter-guard comprising the bar I formed with the end bars I'; the feet R extending forward and downward from and integral with the lower ends of the bars I'; pivotal connections between said feet and the horizontal fender-frame; and the springs S secured at one end to the fender-frame, extending under, and bearing against said feet, and with their opposite ends overlapping and bearing upon rigid connections with the fender-frame, substantially as described.

GEORGE HIPWOOD.

Witnesses:

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A. N. BONNEY.