

No. 722,691.

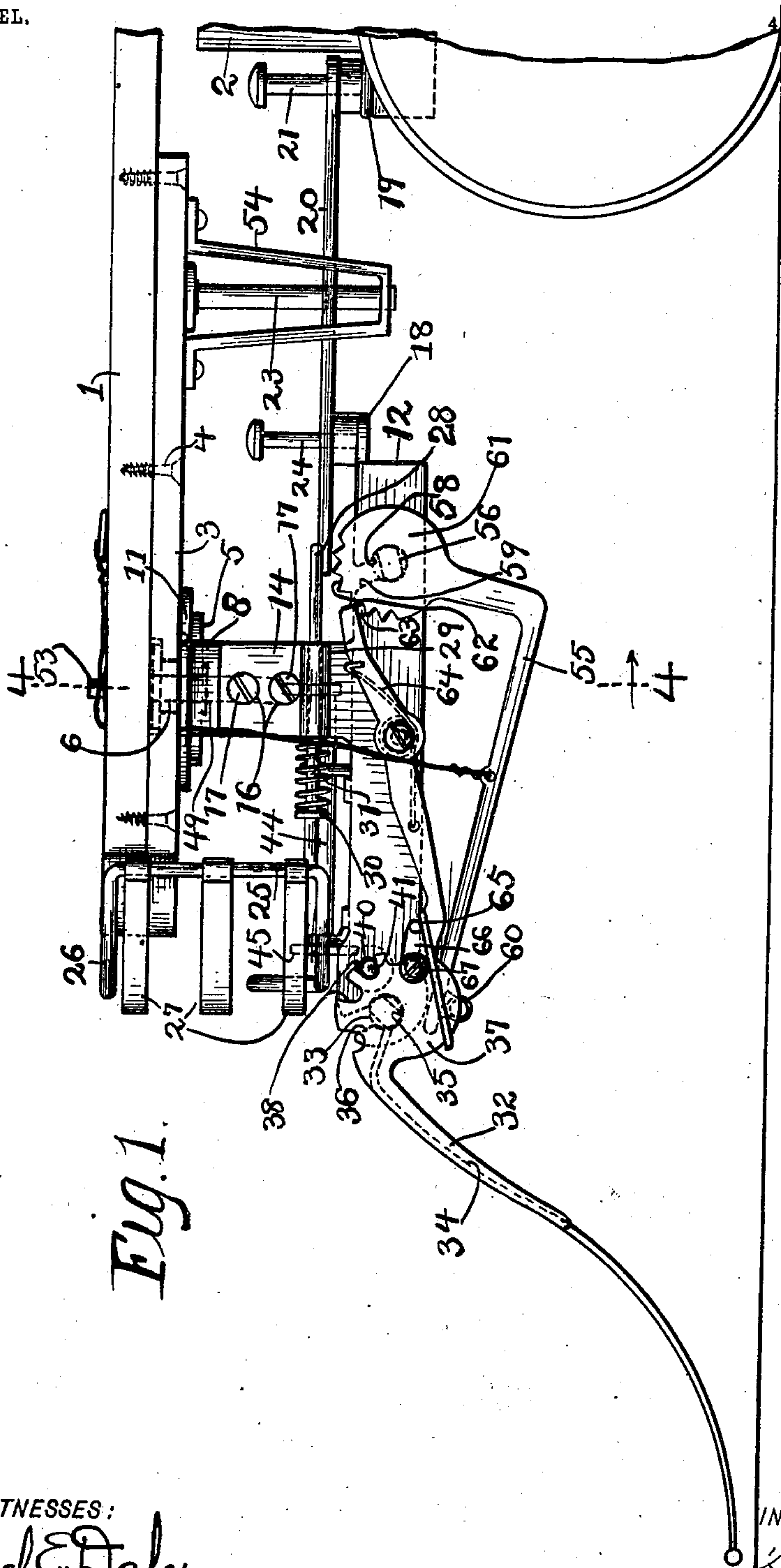
PATENTED MAR. 17, 1903.

G. GEIGER.
LIFE GUARD FOR TRAM CARS.

APPLICATION FILED DEC. 8, 1902.

NO MODEL.

4 SHEETS—SHEET 1.



WITNESSES:

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4 SHEETS—SHEET 2.

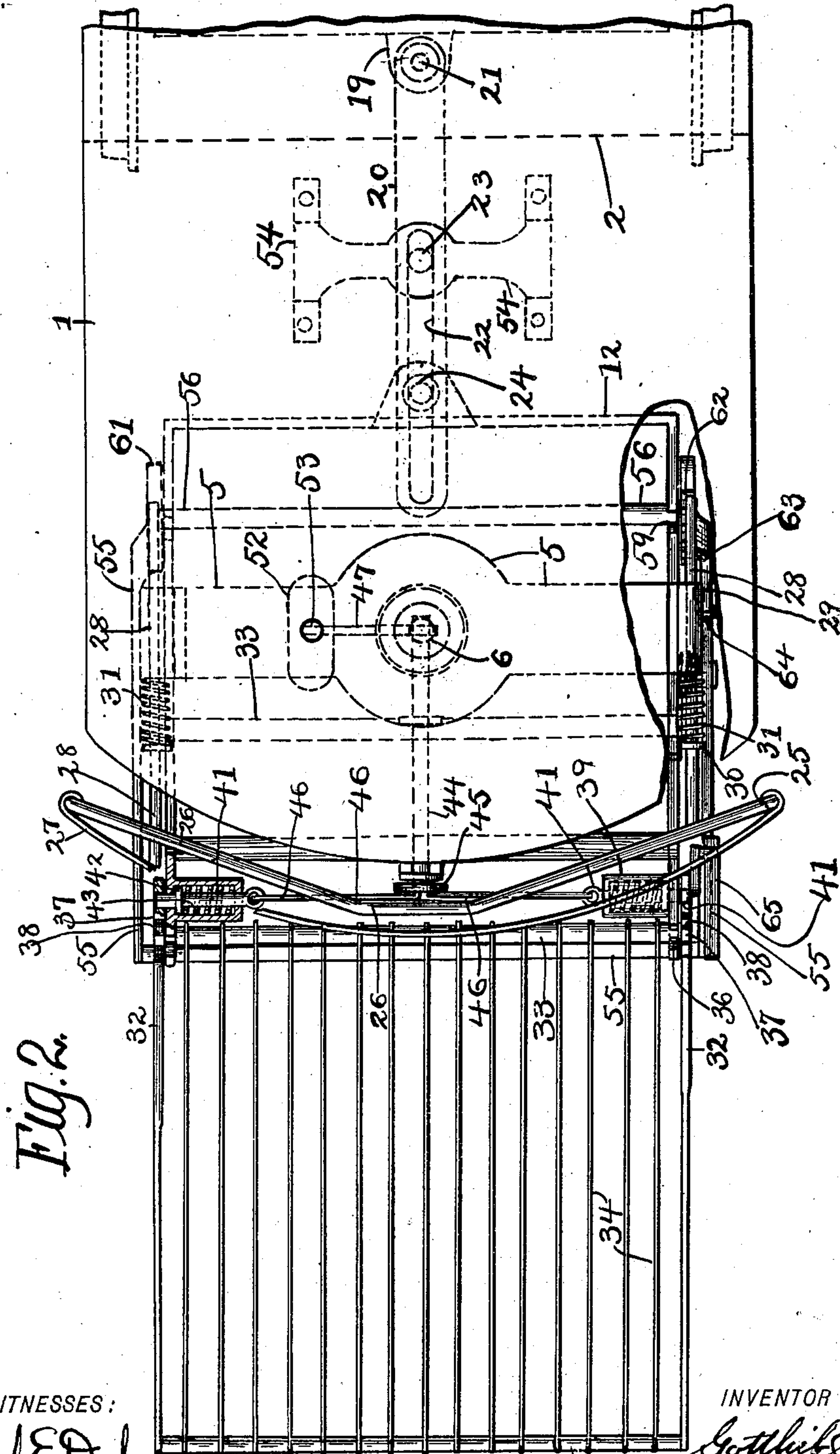


Fig. 2.

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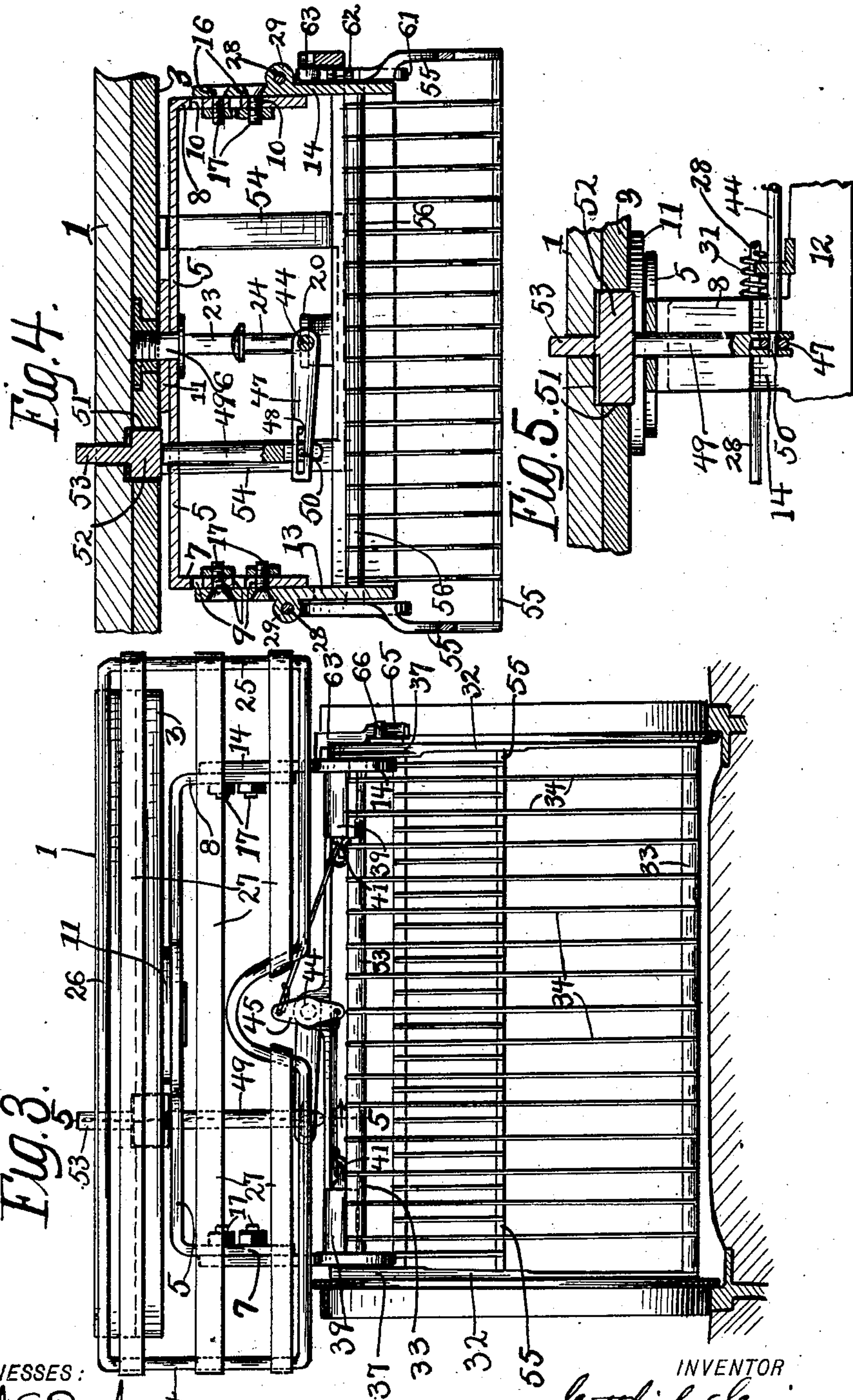
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4 SHEETS—SHEET 3.



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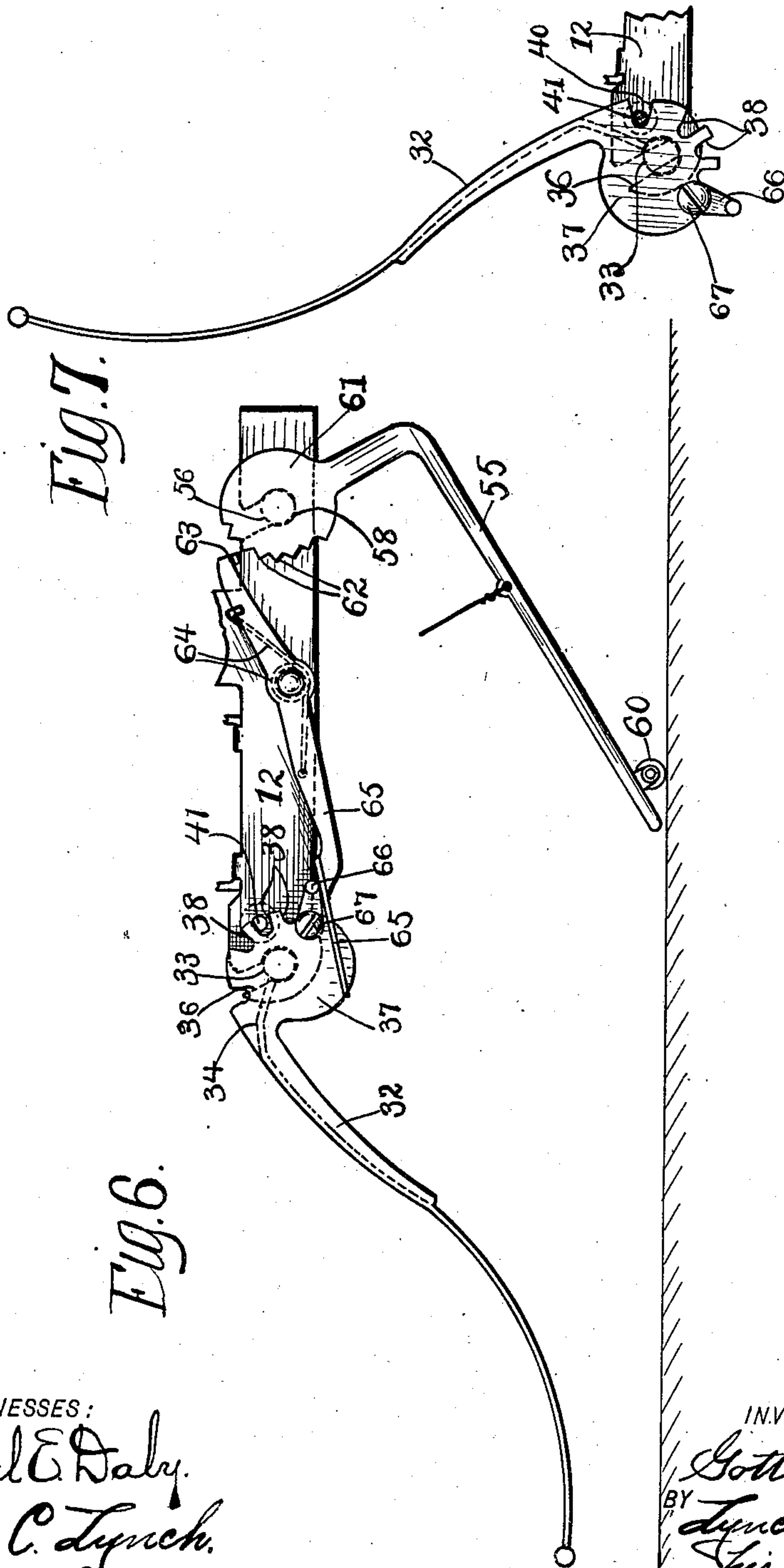
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4 SHEETS—SHEET 4.



WITNESSES:
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UNITED STATES PATENT OFFICE.

GOTTLIEB GEIGER, OF CLEVELAND, OHIO.

LIFE-GUARD FOR TRAM-CARS.

SPECIFICATION forming part of Letters Patent No. 722,691, dated March 17, 1903.

Application filed December 8, 1902. Serial No. 134,246. (No model.)

To all whom it may concern:

Be it known that I, GOTTLIEB GEIGER, a citizen of the United States of America, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Life-Guards for Tram-Cars; and I 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 pertains to make and use the same.

This invention relates to improvements in life-guards for tram-cars, and especially to the class of guards comprising two independent fenders arranged one in advance of the other and adapted to coöperate in preventing a body or obstacle in the path of the car from being injured by contact with the car.

The object of this invention is to provide a guard of the character indicated which will be absolutely certain to operate when the necessity arises and which when in its normal position will be securely locked from any accidental displacement which might bring the fender in contact with the roadway, such as is frequently occasioned in the ordinary style of guard by the jolting of the car, and which generally results in the destruction of the guard.

Another object of my invention is to provide a new and improved cushioning device arranged to extend across the front of the car immediately above the front fender and adapted to lessen the shock received by a body picked up by the front fender and falling against the car.

A further object of my invention is to provide new and improved means for causing the life-guard to follow the curves of the track, new and improved means for suspending the frame of the life-guard so that it may be applied to any car and readily adjusted to any height of trucks, and new and improved means of assembling the guard whereby the fenders and other parts of the guard which are liable to wear may easily be removed and replaced by new ones without putting the car out of service.

With these objects in view my invention therefore consists in the features of construction and combination of parts as illustrated in

the drawings and hereinafter described in the specification and pointed out in the claims.

In the practical application of a life-guard to a car it is quite essential that the life-guard be so constructed that it can readily be applied to the car with the least amount of cutting or disfigurement of the floor of the car, and therefore in carrying out my invention I first provide a plate which can be easily secured to the bottom of the car by means of screws, to which I operatively secure my life-guard and on which the life-guard may be completely assembled before the plate is secured to the bottom of the car. From this plate I pivotally suspend a bracket or supporting-frame so that it will be free to rotate in a horizontal plane. To this bracket-frame is adjustably secured the fender-carrying frame, from which are suspended two fenders one in advance of the other by means of pivotal connections which allow the fenders to be swung up or down, so as to increase or lessen the distance between the lower ends of the fenders and the road-bed. The front fender is provided with a locking device which holds the said fender at any angle relative to the road-bed to which it may be adjusted. The said locking device prevents any downward movement of the fender after it has been adjusted unless the locking device is first unfastened by the motorman, while at the same time the said locking device will not prevent the upward movement of the said fender, so that the said fender will readily yield and move upwardly in case a body becomes wedged thereunder, and also when the car enters the barn the said fender may be turned up in a vertical position against the front end of the car by an attendant, and the locking device will act automatically to hold the fender in its vertical position, thereby allowing the cars to be stored together without danger of crushing the fenders. The rear fender is also provided with a locking device, which likewise prevents the downward movement of the said fender and automatically secures it at any height to which it may be raised. The locking device is operatively connected with the front fender, so that the upward movement of the front fender will disengage the said locking

device from the rear fender and allow the rear fender to fall to its lowest position. The fender-carrying frame is operatively connected with the front truck, so that any movement of the truck on its axial bearings will cause a corresponding rotary movement of the said fender-carrying frame.

In the accompanying drawings, Figure 1 is a view in side elevation, illustrating my improved guard with the front fender arranged in its lowest position and the rear fender in its highest position. Fig. 2 is a top plan of same. Fig. 3 is a front view of same. Fig. 4 is a vertical section on lines 4-4, Fig. 1. Fig. 5 is a vertical section on lines 5-5, Fig. 3. Fig. 6 is a detail view showing the fender-carrying frame with the front fender raised sufficiently to disengage the locking device from the rear fender and the rear fender in its lowest or operative position. Fig. 7 is a detail view showing a portion of the fender-carrying frame with the front fender in its highest position, or the position it occupies when the car is in the barn.

Again referring to the drawings, 1 represents the floor of the car, extending beyond the front truck of the car.

2 represents the front truck.

To the under side of the floor 1 I secure a plate 3, of wood or other suitable material, by means of screws 4. From the plate 3 is rotatably suspended a bracket-frame 5 by means of a bolt, stud, or other suitable pivotal connection 6. The bracket-frame 5 is provided with two depending arms 7 and 8, respectively. In these arms are formed openings or bolt-holes 9 and 10, respectively, the object of which will appear later. A center plate 11 is preferably interposed between the adjacent surfaces of the plate 3 and the bracket-frame 5. At each side of the fender-carrying frame 12 are arranged upwardly-extending arms 13 and 14, in which are formed series of bolt-holes 15 and 16, respectively, so arranged that any two bolt-holes in either of the said arms 13 and 14 can be caused to register with any two bolt-holes in the respective arms 7 and 8, which depend from the bracket-frame. The fender-carrying frame is then secured to the bracket-frame by passing bolts 17 through the registering bolt-holes in the respective arms, and therefore the distance at which the fender-carrying frame is suspended above the ground can be increased or decreased, accordingly as the upper or lower holes of the series in the respective arms 7 and 8 are caused to register with holes in the respective arms 13 and 14. On the rear end of the fender-carrying frame is secured a rearwardly-extending arm 18.

At the center of the front of the truck 2 is secured an arm 19, to which is pivotally secured one end of a link or lever 20 by means of a long pin or stud 21. A longitudinally-extending slot 22 is formed in the lever 20, and through this slot is passed a long pin or

stud 23, which is secured in the plate 3 and forms a fulcrum for the said lever 20. The lower end of the pin 23 is journaled in a frame 54, secured to the plate 3. Another long pin or stud 24 is passed through the said slot 21 at the end near the fender-carrying frame and is secured in the arm 18, which projects therefrom. The object in using the long pins or studs 21, 23, and 24 is to operatively secure the ends of the lever to the truck and fender-carrying frame, respectively, so as to allow the fender-carrying frame to be adjusted at a greater or less distance from the road-bed without having to change or remove the said studs or pins. The lever 20 is instrumental in transmitting any rotary movement of the truck on its center-bearings to the said fender-carrying frame, so that the said frame will turn on its pivotal connection with the floor of the car, thereby causing the fender to follow the curvature of the track or road-bed. The operation thereof will be readily understood. When the truck 2 turns on its center-bearings, as when a car is going around a curve, the end of the lever 20, which is pivotally secured to the arm 19 on the said truck 2, will move in the same direction as the front end of the truck. The lever 20 will therefore swing on the pin 23 as a fulcrum, and the end of the lever connected to the fender-carrying frame will move in the opposite direction to that in which the end connected to the truck moves, and the front end of the fender-carrying frame will be swung around in the same direction as that in which the front end of the truck moves, and the fenders will therefore follow the curves of the track.

My improved cushioning device is arranged directly above the front end of the fender-carrying frame 12 and extends up and around the front end of the car. This device comprises a frame which is preferably formed of light steel rods and consists of two vertical side members 25 and two horizontal top and bottom members 26. The top and bottom members are curved or bowed outwardly, corresponding to the curvature of the front end of the car. A series of outwardly-curved bow-springs 27 are arranged to span the space within the frame and are secured at their respective ends to the respective side members 25. To each of the side members 25 is secured a horizontally-arranged rod 28. On each of the sides of the fender-carrying frame 12 is formed a guideway 29, adapted to receive one of the rods 28, so that the said rod can slide horizontally therein. On each rod 28 is secured a collar 30, and on each of the said rods 25, between its collars 30 and its guideway 29, is mounted a coil-spring 31. It will be readily seen that if a body is thrown against the front part of the car it will come into contact with the bow-springs 27, which will gently yield, preventing any serious injury from the immediate contact with the device, while at the same time the whole device

will move back against the tension of the springs 31, which almost completely neutralizes the force of the collision.

The front fender is of the usual construction and comprises curved side pieces 32, which are secured together by means of top and bottom rods 33. The space within the frame of the fender is preferably filled by a series of resilient steel rods 34, which are secured at their respective ends to the respective rods 33. In the front end of each of the respective side pieces of the fender-carrying frame 12 is formed an eye or socket 35, which is provided with an inlet or mouth 36 smaller than the diameter of the said opening. The ends of the rod 33, which forms the top bar of the front fender, are somewhat reduced in size, so that through their shorter axes they are about equal in thickness to the width of the respective mouths 36 of the sockets 35, while through their longer axes they are approximately equal in thickness to the diameters of the said sockets 35. The ends of the rod 33 therefore can be inserted in the respective sockets 35 through the respective mouths 36, and the respective mouths are so arranged that the ends of the rods 33 can be inserted into or withdrawn from the respective sockets only when the fender is swung to its uppermost position, as shown in Fig. 7, and when the fender is in any other position the ends of the said rod 33 are securely locked in the said sockets 35. The sockets 35 therefore form bearings for the top rod 33, by means of which the fender is rotatably suspended from the front end of the said fender-carrying frame and in which it is securely locked under ordinary conditions, but from which it may be readily removed if occasion demands.

At the upper end of each of the side pieces 32 of the front fender is an annular enlargement or head 37, which is provided with a series of notches or depressions 38. On the inner faces of each of the side pieces of the fender-carrying frame 12 is mounted a cylindrical casing 39. Small openings 40 are formed in the said side pieces of the fender-carrying frame and communicate with the interior of the respective casings 39. A latch or dog 41 is arranged within each casing 39, which is of sufficient length to extend through the opening 40 and register with one of the notches 38 in the adjacent head 37. A collar 42 is secured on each latch 41, and on each latch between its respective collar and the inner end of the casing is arranged a coil-spring 43, which is always under tension, so that the respective latches 41 will normally be in engagement with the respective heads 37. The outer end of each latch 41 is beveled on the top, so that when the fender is swung upwardly the latches will yield and move into their casings; but the fender will be securely locked against any downward movement.

In the fender-carrying frame 12 and near the center line thereof is journaled a horizon-

tal shaft or rod 44, on the outer end of which and between the respective casings 39 is rigidly mounted a short crank-arm 45, which is arranged centrally thereon. Links 46 connect the respective end of crank-arm 45 with the respective latches 41 in the respective casings 39. On the inner end of the shaft 44 is rigidly secured a short horizontal crank-arm 47, in the free end of which is formed a slot 48. A vertical rod 49 is supported at its upper end by passing it through an opening formed in the bracket-frame 5, and at its lower end it straddles the slotted end of the arm 47 and is operatively connected thereto by means of a pin 50, which passes through the slot 48. In a guideway-forming recess 51, formed in the plate 3 above the end of the vertical rod 49, is arranged a plate 52, which is provided with a stem 53, which projects up through the floor of the car. The plate 52 is made sufficiently long so that at all times a portion of the said plate will be above the end of the vertical rod 49, and no matter what angle the fender-carrying frame may assume relative to the car the said plate can be brought into contact with the said rod.

It will be readily understood that in order to throw the front fender to its lowest position the motorman will press down with his foot the stem 53, thereby bringing the plate 52 into contact with the upper end of the vertical rod 49, and continued pressure thereon will cause the rod 47 to swing down, thereby rotating the shaft 44, which in turn throws the crank-arm 45, and thereby pulls back the latches 41 in the respective casings 39, freeing them from their engagement with the sides of the fender and allowing the fender to fall to its lowest position.

The rear fender comprises a U-shaped frame 55, in the upper part of which is arranged a rod 56, and the space within the frame is spanned by a series of resilient bars 57. The rear fender is detachably supported from the fender-carrying frame in the same way as the front fender, the rod 56 being journaled in sockets 58, formed in the respective sides of the fender-carrying frame, and the said sockets 58 are provided with mouths 59, which allow the said rod to be inserted into or removed from the said sockets, as desired. The rear fender is preferably provided at its lower end with a roller 60. At the upper end of the respective sides of the fender-frame are formed annular enlargements or heads 61, in each of which is formed a series of notches or indentations 62.

On the outer faces of each side of the fender-carrying frame 12 are pivotally secured pawls 63, the respective ends of which are arranged to enter the notches 62 on the respective heads 61. Springs 64 are provided for normally holding the said pawls in engagement with the said heads. Triggers 65 are formed integral with the respective pawls 63 and extend out under the respective heads 37, formed on the front fender. Small fingers

66 are adjustably mounted on the respective heads 37 on the front fender by means of bolts 67. These fingers 66 are so arranged that when the front fender is tipped up the respective fingers 66 will swing down into contact with the respective triggers 65, depressing the triggers and lifting the respective pawls out of engagement with the respective heads on the rear fender and allowing the said fender to fall to its lowest position. The fingers 66 are made adjustable, because the normal distance of the lower end of the front fender above the road-bed will vary with different road-beds, and the fingers 66 must be accordingly adjusted so that they will not touch the triggers when the front fender is in its normal position, but will trip them if the fender is slightly raised above its normal position. A rope or chain 68 is preferably secured to the rear fender, by means of which the said fender may be drawn back into its normal position or tied up in case any part thereof becomes disarranged.

The rear fender is designed to operate as follows: If a body comes into contact with the front fender before the front fender has been dropped to its lowest position, the body will roll under the front fender and tilt it up, thereby bringing the fingers 66 into contact with and depressing the triggers 65, thereby freeing the pawls from their engagement with the rear fender, and the rear fender falls of its own weight in time to catch the body and prevent it being injured by the trucks of the car.

What I claim is—

1. In a life-guard for a tram-car, the combination with the body of the car, of a supporting-bracket operatively secured to the bottom of the said car, arms depending from said bracket, a series of bolt-holes formed in said arms, a fender-carrying frame, arms formed on sides of said fender-carrying frame, a series of bolt-holes formed in said arms and bolts for securing the respective arms on the bracket-frame with the respective arms on the fender-carrying frame, substantially as described.

2. In a life-guard for a tram-car, the combination with the car, of a supporting-bracket rotatably secured to the bottom of said car, a fender-carrying frame, means for adjustably securing said fender-carrying frame to said supporting-bracket, whereby the distance of said fender-carrying frame, below the floor of the car may be adjusted according to the height of the trucks of said car and means for operatively connecting the said fender-carrying frame with the front truck of the said car so that the said fender-carrying frame may be adjusted relative to the floor of the car without disconnecting the said fender-carrying frame from the said truck.

3. In a life-guard for a tram-car, the combination with the car of a fender-carrying frame pivotally secured to the bottom of said car so as to be capable of rotating in a hori-

zontal plane, a lever fulcrumed on the bottom of said car, said lever being operatively secured at one end to the said fender-carrying frame and at its other end to the front truck of the said car.

4. In a life-guard for a tram-car, the combination with the car, of a fender-carrying frame pivotally secured to the bottom of said car, a lever pivotally secured at one end to the front truck of said car, a slot formed in said lever, a pin secured in the bottom of said car and extending down through said slot in said lever, and a second pin secured on the rear end of said fender-carrying frame and extending through said slot in said lever, substantially as described and for the purpose set forth.

5. In a life-guard for a tram-car, the combination with the body of the car, of a device for cushioning the front end of the car, comprising a vertically-arranged frame, having a curvature corresponding to the curvature of the front end of the car, bow-springs arranged to span the space within said frame, guideways formed on the bottom of said car, horizontal rods secured to said frame and arranged to slide in said guideways, and coil-springs arranged on said rods, and adapted to hold the said frame in advance of the front end of said car.

6. In a life-guard for a tram-car, the combination with the body of the car, of a fender-carrying frame and a device for cushioning the front end of the car, comprising a vertical frame, bow-strings arranged on said frame, guideways arranged on said fender-carrying frame, rods rigidly secured to said vertical frame and arranged to slide in said guideways, collars secured on said rods, and coil-springs arranged on said rods, between the said collars and said guideways, substantially as described and for the purpose set forth.

7. In a life-guard for a tram-car, the combination with the bottom of the car, of a fender-carrying frame operatively secured to the bottom of said car, a fender hinged on the front end of said fender-carrying frame, notches formed in the side pieces of said fender near the top thereof, casings mounted on said fender-carrying frame, latches arranged within said casing and arranged to come into engagement with said notches, springs arranged in said casings and adapted to hold the said latches in the said notches, a horizontal shaft journaled in said fender-carrying frame, a crank secured on the front end of said shaft, links connecting the respective ends of said crank with the respective latches, and means for rotating said shaft.

8. In a life-guard for a tram-car, the combination with the body of the car, of a fender-carrying frame operatively secured to the bottom of the said car, a fender hinged on the front end of said fender-carrying frame, heads formed on the upper end of said fender, notches formed in said heads casings mount-

ed on said fender-carrying frame, latches arranged within said casing and adapted to enter the said notches in the said heads, springs arranged within said casings and adapted to hold said latches in said notches, a horizontal shaft journaled in said fender-carrying frame, a crank secured on the front end of said shaft, links connecting the respective ends of the said crank with the respective latches, a crank-arm secured at the opposite end of said shaft, a vertical rod pivotally secured to said crank-arm and means for depressing said vertical rod, substantially as described.

9. In a life-guard for a tram-car, the combination with a car, of a fender-carrying frame pivotally secured to the bottom of said car, a fender hinged on the front end of said fender-carrying frame, latches arranged on said fender-carrying frame, and arranged to engage with said fender so as to hold the said fender at a predetermined height above the road-bed means for normally holding the said latches in engagement with said fender, a horizontal shaft journaled in said fender-carrying frame, a crank secured on the front end of said shaft, links connecting the respective ends of said crank with the respective latches, a crank secured at the opposite end of said horizontal shaft, a vertical rod pivotally secured at its lower end to said last-mentioned crank, a plate arranged above the end of said vertical rod and supported from the bottom of the car, so that it may be brought into contact with the upper end of said vertical rod irrespective of the position of the said fender-carrying frame, and a stem secured to said plate and arranged to extend upwardly through the floor of said car, substantially as described.

10. In a life-guard for a tram-car, the combination with the body of the car, of a fender-carrying frame operatively secured to the body of said car, a fender hinged on the front end of said fender-carrying frame, means for securing said fender at a predetermined height above the road-bed, so that it will be locked against downward movement but will be free to move upwardly, a second fender supported from said fender-carrying frame in the rear of said first-mentioned fender, heads formed on said rear fender notches formed in said heads, pawls arranged on said fender-carrying frame, so as to enter the said notches and hold the said fender at a predetermined height above the road-bed, triggers rigidly secured to the respective pawls, and fingers secured on the front fender and arranged to come into contact with the said triggers, when the said front fender is moved upwardly, substantially as described.

11. In a life-guard for a tram-car, the combination with the car, of a fender-carrying frame, operatively secured to the bottom of the car, a fender hinged on the front end of said fender-carrying frame, means for securing said fender at a predetermined height

above the road-bed so that it will be locked against downward movement but will be free to move upwardly, a second fender supported from the said fender-carrying frame in the rear of said first-mentioned fender, a pawl arranged to engage with and hold the said rear fender at a predetermined height above the road-bed, a trigger secured to said pawl, a finger adjustably secured to said front fender and arranged to come in contact with said trigger, when the said front fender is raised, and means for adjusting the said finger according to the height at which the said fender will be supported.

12. In a life-guard for a tram-car, the combination with the car, of a fender-carrying frame pivotally secured to the bottom of the said car, means for adjusting the position of said fender-carrying frame, below the floor of the car, according to the height of the trucks of said car, a lever fulcrumed on the bottom of said car, and means for operatively connecting the respective ends of the said lever to the said fender-carrying frame and the front truck of the car, respectively, so that the said fender-carrying frame may be adjusted vertically without disturbing said means.

13. In a life-guard for a tram-car, the combination with the car of a supporting-bracket rotatably secured to the bottom of said car, a fender-carrying frame, means for adjustably securing said fender-carrying frame to the said supporting-bracket whereby the distance of said fender-carrying frame below the floor of the car may be adjusted according to the height of the trucks of the said car, a lever fulcrumed on the bottom of said car, means for operatively connecting the respective ends of said lever to said fender-carrying frame and the front truck of the car, respectively, so that the said fender-carrying frame may be adjusted vertically without disturbing said means, a fender hinged on the front end of said fender-carrying frame, means for securing said fender at a predetermined height above the road-bed so that it will be locked against downward movement but will be free to move upwardly, a second fender supported from said fender-carrying frame in the rear of said first-mentioned fender, means for locking the rear fender at a predetermined height above the road-bed, a device secured to the front fender and arranged to come in contact with the means for locking the rear fender in its predetermined position, and means for adjusting said device on said front fender, in accordance with the distance between the lower end of the front fender and the road-bed when the said front fender is in its normal position.

14. In a life-guard for a tram-car the combination with the car, of a fender-carrying frame rotatably secured to the bottom of said car, means for operatively connecting the fender-carrying frame with the front trucks of said car so that the fender-carrying frame will turn corresponding to the movement of

the said trucks on their center bearings, a fender hinged on the front end of said fender-carrying frame, means for locking said fender at a predetermined height above the road-bed, means for disengaging said locking means from said fender and a plate supported from the bottom of said car and arranged so that it can at all times be brought into engagement with said means for disengaging said locking means irrespective of the position of the fender-carrying frame.

15 15. In a life-guard for a tram-car the combination with a car, of a fender-carrying frame rotatably secured to the bottom of said car, means for causing the said fender-carrying frame to turn in conformity to the curvature of the road-bed, a fender hinged on the front end of the fender-carrying frame, means

for locking said fender at a predetermined height above the road-bed, means for disengaging said locking device from said fender, a plate arranged below the floor of said car so that it may at all times be brought into engagement with said means for disengaging the said locking means irrespective of the position of said fender-carrying frame, and means for bringing said plate into contact with the said means for disengaging said locking device.

In testimony whereof I sign the foregoing specification in the presence of two witnesses.

GOTTLIEB GEIGER.

Witnesses:

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G. M. HAYES.