

No. 619,841.

Patented Feb. 21, 1899.

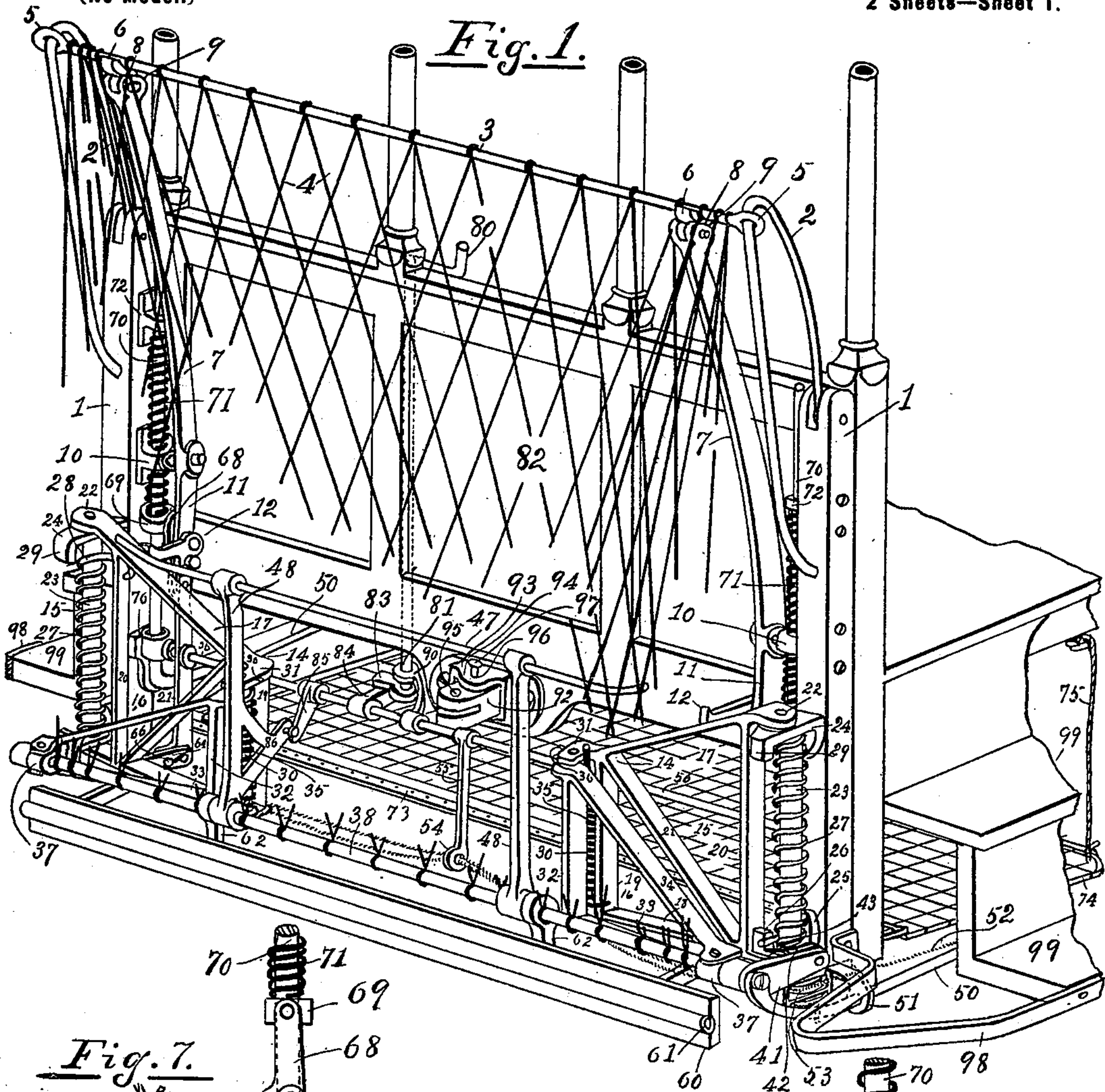
G. RISCHMULLER.  
CAR FENDER.

(Application filed June 9, 1898.)

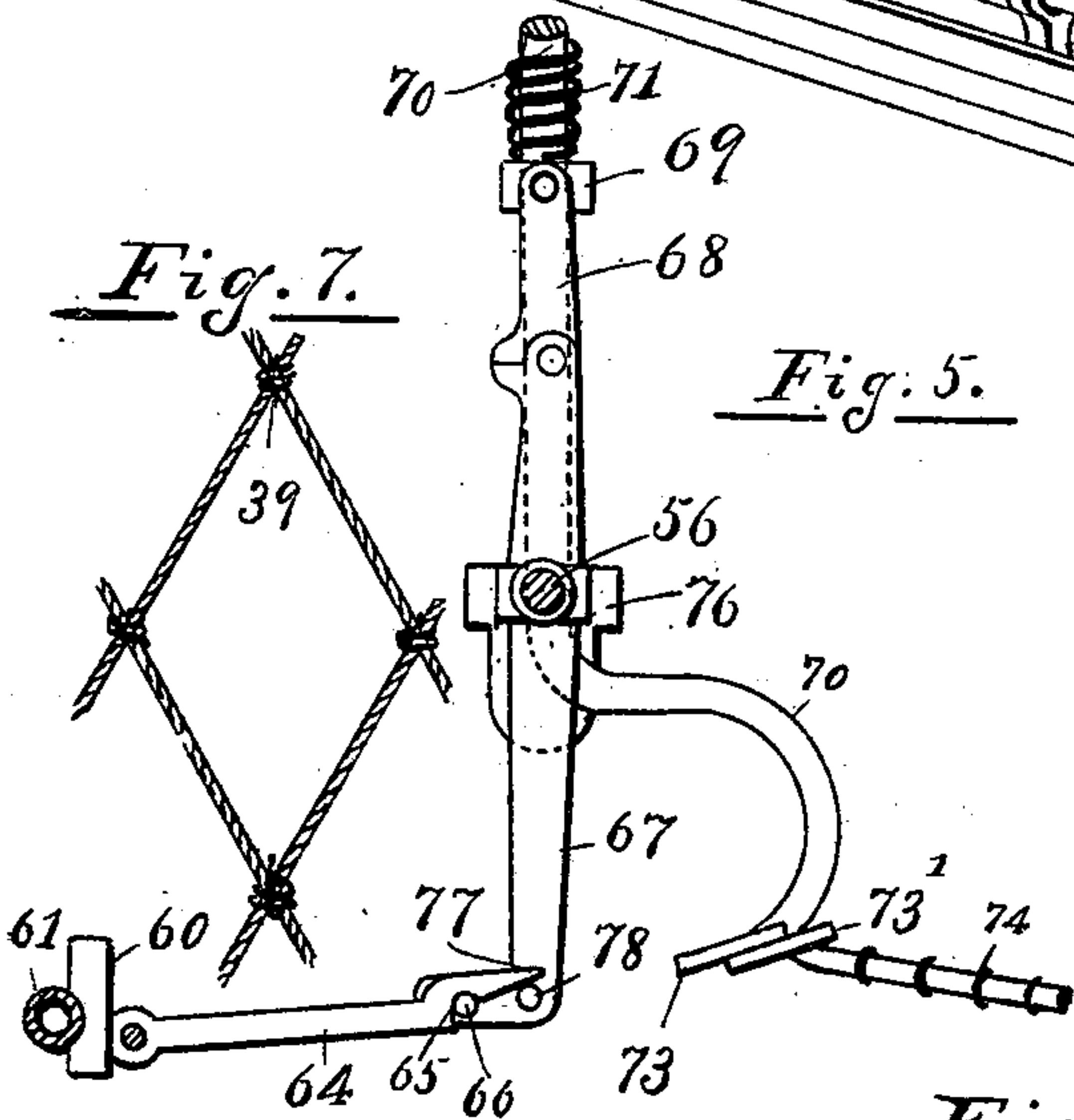
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(No Model.)

*Fig. 1.*

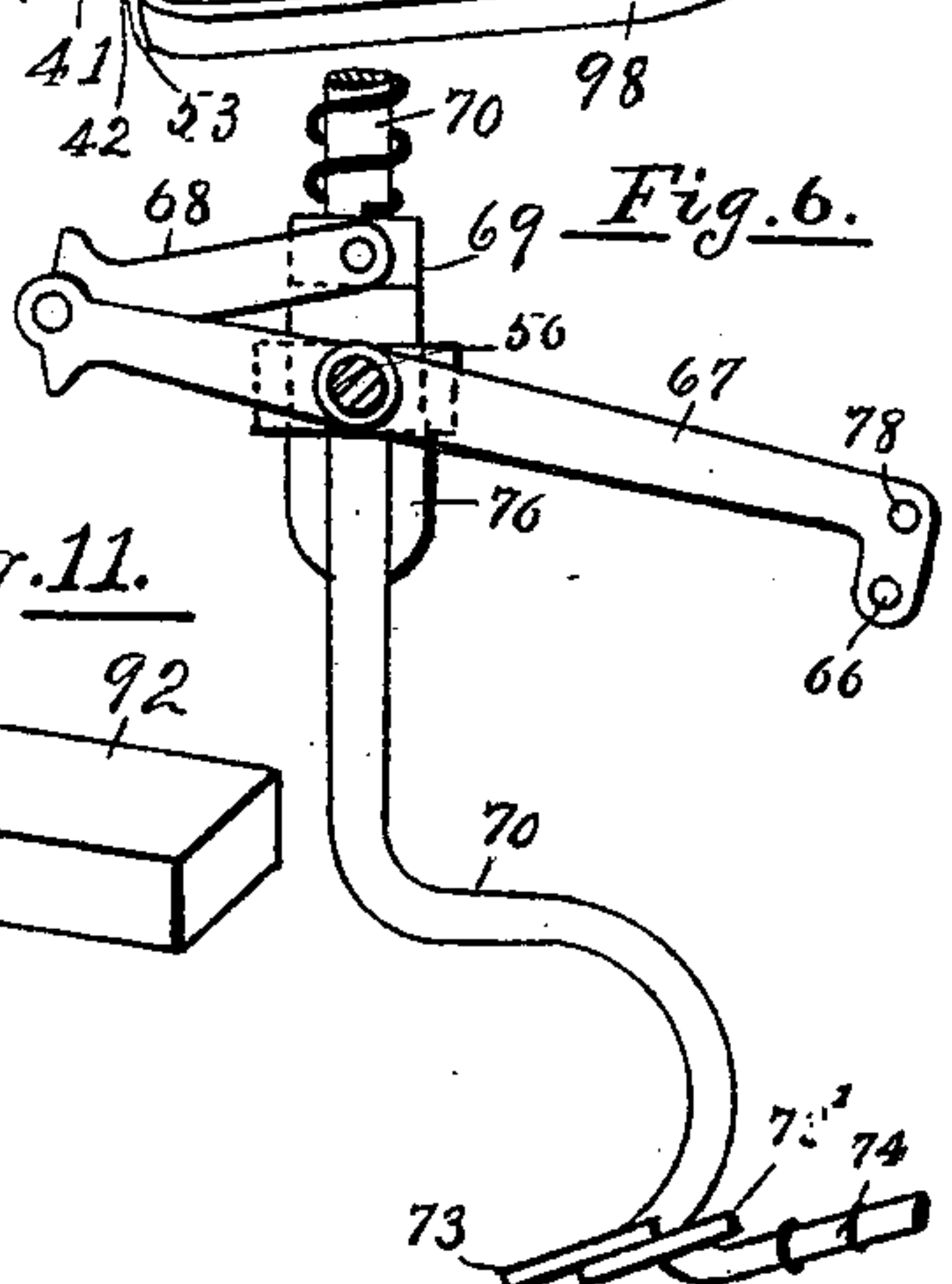


*Fig. 7.*

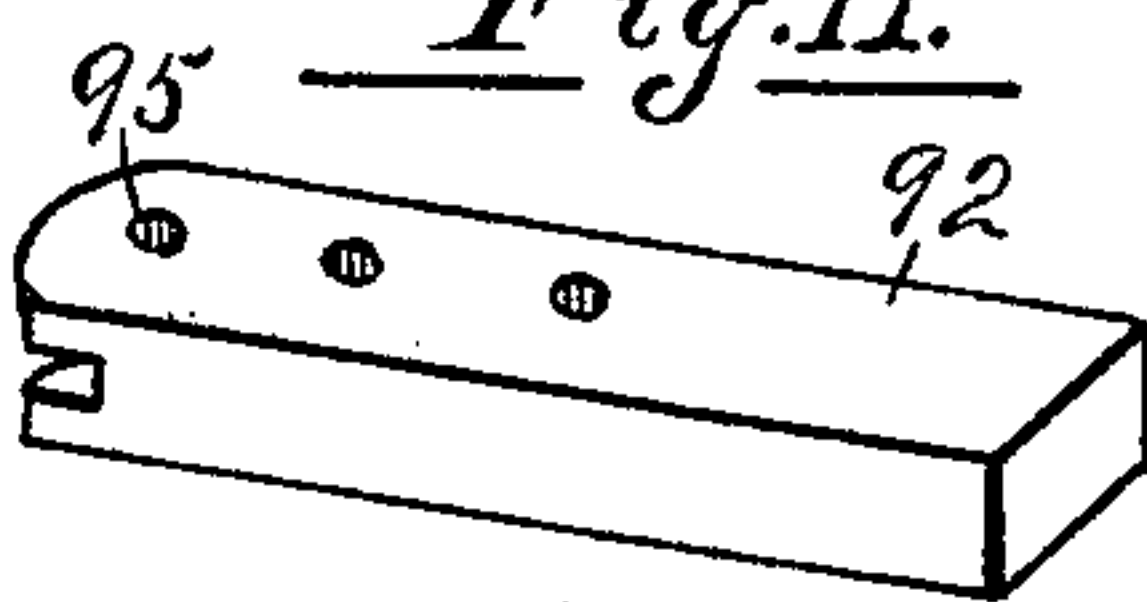


*Fig. 5.*

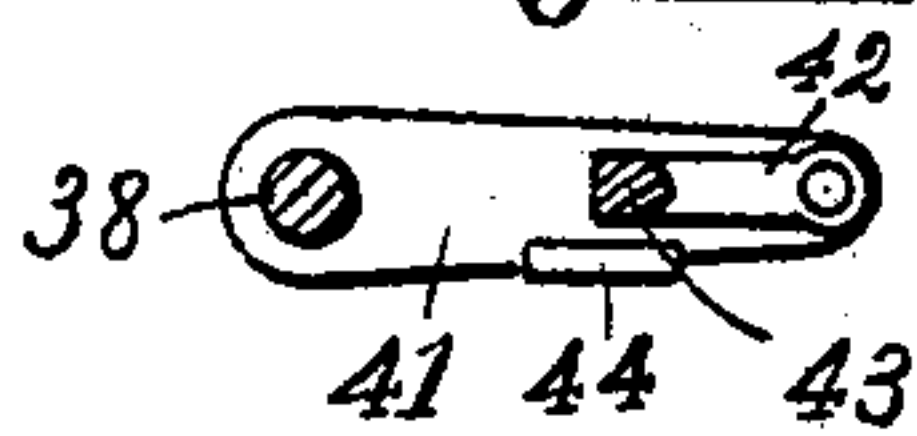
*Fig. 6.*



*Fig. 11.*



*Fig. 8.*



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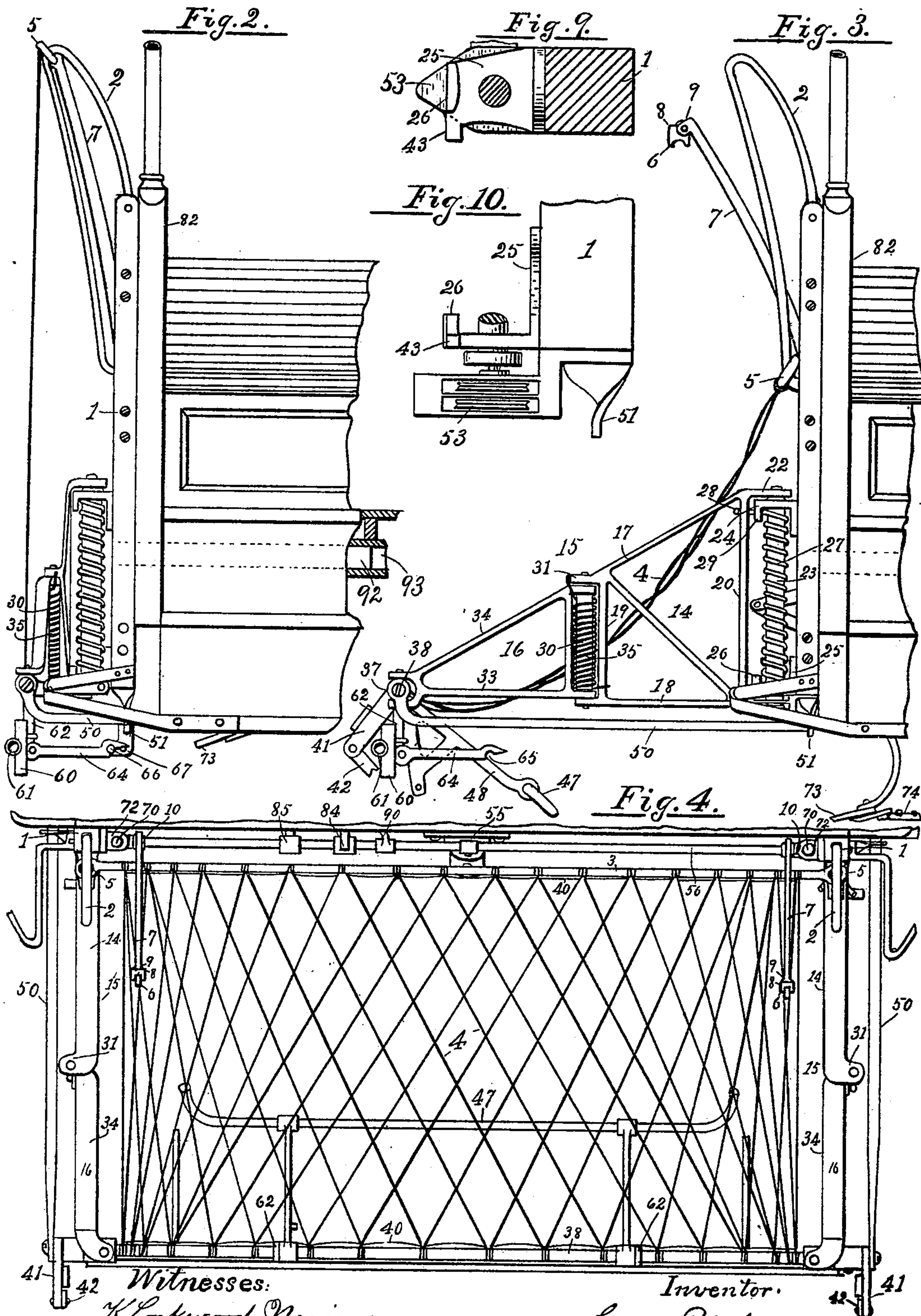
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2 Sheets—Sheet 2.



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# UNITED STATES PATENT OFFICE.

GEORGE RISCHMULLER, OF SAN FRANCISCO, CALIFORNIA.

## CAR-FENDER.

SPECIFICATION forming part of Letters Patent No. 619,841, dated February 21, 1899.

Application filed June 9, 1898. Serial No. 683,013. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE RISCHMULLER, a citizen of the United States, residing at San Francisco, in the county of San Francisco and State of California, have invented certain new and useful Improvements in Car-Fenders, of which the following is a specification.

My invention relates to improvements in car-fenders, the object of my invention being to provide a fender for street-cars which will prevent injury to a person on the track, whether standing or lying thereon, which will impinge against such a person when standing on the track in such a way that the force of impact may be reduced to a minimum, although the car may be moving at a high rate of speed, which will then receive and hold such person without injury in a suitable receptacle, and which will also raise from the track a person lying thereon.

My invention also comprises various novel constructions, combinations, and arrangements of parts for the above end hereinafter fully specified, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a perspective view of the device. Fig. 2 is a side elevation of the device closed. Fig. 3 is a similar view of the device extended. Fig. 4 is a plan view of the fender extended. Fig. 5 is a detail of the mechanism for operating the apron in its normal position. Fig. 6 is a similar view of the same after it has been operated. Fig. 7 is a detail of the net. Fig. 8 is a detail section of a restraining device for the fender. Figs. 9 and 10 are details of the equalizing device, and Fig. 11 is a detail view of the draw-bar.

Referring to the drawings, 1 1 represent standards fixedly secured to the dashboard of the car. On the upper portion of each standard is firmly secured a guide 2 for the top bar 3 of the net 4, said bar having eyes 5 at its ends sliding on said guides. Said top bar 3 is normally supported at each end in the hooked end of a short arm 6, pivoted on the end of a long lever 7. Since the top bar 3 can fall only in the direction of the guides 2, the weight of the net so constrained produces a resultant force tending to press the upper end of the lever 7 backward. Shoulders 8 on the arms 6 engage with shoulders 9 on the le-

vers 7 when the arms 6 are thrown backward on said levers and prevent further rearward movement of said arms, and in this position the top bar 3 of the net is normally held in the hooked ends of said arms; but if the levers 7 are vibrated so that their upper ends move rearwardly the free ends of the arms 6 swing rapidly forward, releasing the top bar of the net and permitting the same to fall, its fall being guided by the guides 2.

The levers 7 are pivoted on brackets 10, extending from the standards 1, and the lower arms 11 of said levers each carry a dog 12, pivoted at the lower ends of said levers. Said levers are held in position supporting the top bar of the net—that is, the lower arms 11 are held back—by the dogs 12 resting against the upper chord 17 of sections 14 of toggle-frames 15, which are by means to be presently described normally held closed or folded. When said toggle-frames move forward, the pressure holding back the lower arms 11 through the medium of the dogs 12 is immediately withdrawn. The arms 11 then immediately move forward with the toggle-frames and the upper ends of the levers 7 move rearwardly, permitting the net to fall, as explained in the preceding paragraph.

The toggle-frame 15 at each side of the car-fender comprises two jointed sections 14 16. The inner section 14 is composed of the upper oblique chord 17, the lower horizontal chord 18, the inner and outer vertical members 19 20, and the truss member 21. From the upper and lower ends of the side of the section 14 extend horizontal ears 22, which support the vertical shaft 23, rotatable in bearings 24 25, secured to and extending from the standard 1. The lower bearing 25 has an upwardly-extending lug 26, which supports the pressure from the end of a powerful coiled spring 27, disposed around the shaft 23, the upper end 28 of said spring having a similar engagement with the vertical member 20 of the section 14. Thus the tendency of the spring 27 is to throw the toggle-frame 15 forward and straighten the same when said frame has been released from its restraining device. The upper bearing 24 has a downwardly-extending lug 29, which acts as a stop to the upper end 28 of the spring when the frame has been thrown outward. The for-



ward or outer section 16 of the frame is pivoted to the section 14 by a bolt or shaft 30, passing through ears 31 on the two sections, and is triangular in form, having a vertical member 32, a lower horizontal member 33, and an oblique member 34. A coiled spring 35, disposed around the bolt 30, its ends abutting against the inner vertical members 19 32, tends to separate the two sections and to straighten the toggle-frame. A pin or stud 36, extending horizontally from the inner portion of the section 14, will abut against the upper end of the spring 35 when the toggle-frame is straightened out and will limit the movement thereof. The horizontal member 33 and the oblique member 34 are pivoted at their outer ends on the opposite sides of a sleeve 37, and in the two such sleeves at the opposite sides of the car is mounted a rock-shaft 38.

Between the rock-shaft 38 and the top bar 3 is supported the net 4, the ends of said net extending wholly from one bar to the other, as shown. The cords are tied together where they cross, as shown in detail at 39 in Fig. 7. Cords 40, secured to the net near the points of attachment to the bar 3 and shaft 36, serve to maintain the cords of the net in their proper relative positions.

The net 4 will be held up, the toggle-frames 15 closed, and the parts maintained in this position against the pressure of the springs 27 and 35 by means of arms 41, rigidly secured to the rock-shaft 38 at its ends and carrying dogs 42, pivoted on their outer ends, the free ends of said dogs being adapted to abut against shoulders 43, extending from the lower bearings 25, the arms 41 carrying ledges 44, adapted to abut against the under sides of the shoulders 43 and serve as stops when the arms 41 are raised into position.

So long as the arms 41 and the dog 42, carried thereby, are in line, as shown in Fig. 8, the resistance offered by the shoulders 44 to the pressure from the springs 27 and 35 will prevent the extension of the toggle-frames; but as soon as the pivots by which the dogs 42 are secured to the arms 41 are dropped below or out of line with the shoulders 43 and the rock-shaft 38 there is no longer any direct resistance offered to said springs, and said arms and dogs are by the force of said springs spread out from each other, and the toggle-frames are extended, the lower part of the net supported on the rock-shaft 38 at once shooting forward. At the same time the dogs 12 and the lower arms of the levers 7 move forward, permitting the upper end of the net to fall, guided in said fall by the guides 2. The net will thus move into the position shown in Fig. 3, and in so doing will catch without injury any person who may have collided against it. In order that this operation may take place automatically on collision with a body on the track, there is provided a guard-rail 47, extending across the front of the car behind the net at a suitable height from the ground and supported at the

end of arms 48, rigidly secured to the rock-shaft 38. When the car strikes a person standing on the track, said rail will be moved inwardly by said collision, thereby rocking the shaft and causing the points of juncture of the arms 41 and dogs 42 to drop out of center, thereby releasing the toggle-frames and permitting the net to operate under the action of the springs.

To insure that both sides of the net shall move forward uniformly, there is provided at each end of the rock-shaft 38 a guide-rod 50, which slides through a bearing in a bracket 51, secured on the standard 1, and extends underneath the front portion of the car. To the rear end of each guide-rod is secured a cord 52, which passes around a pulley 53 at the foot of the standard 1, then through an eye 54, near the center of the car, suspended by a rod 55 from the rock-shaft 38, thence around a pulley 57 at the foot of the opposite standard 1, and then is secured to the other guide-rod 50 at its forward end. Thus when either guide-rod is moved forward it causes the cord 52, attached to its forward end, to move with it and around the pulleys 53 57, and thus by means of said cord draws with it the other guide-rod to the same extent, and thus both sides of the fender move forward uniformly.

In order to prevent injury to a person lying on the track, there is provided a guard 60, extending across the front of the car sufficiently near to the ground to come into contact with anybody lying thereon, said guard being preferably formed of a strip of wood, with a length of rubber tubing 61 mounted in the front thereof. The guard 60 is loosely suspended by hangers 62 from the rock-shaft 38. From said guard near each end extends rearwardly the pivoted arm 64, which has at its rear end a notch 65, engaging a pin 66 on the foot of a lever 67, rigidly mounted on the rock-shaft 38. When contact is made with a body lying on the track, said guard 60 is moved rearwardly, thus moving rearwardly the lower arm of the lever 67 and rocking the shaft. The upper arms of said levers 67 are thus moved forward, and so, also, bring forward the lower ends, to which said levers 67 are connected, of links 68, the upper ends of which links are secured to collars 69, rigidly mounted on posts 70. Powerful springs 71, interposed between said collars 69 and guides 72 for said posts, tend to thrust said posts downward. This they will do so soon as the lower ends of the links where they are pivoted to the levers 67 shall have been moved in front or out of line with said levers and links, and no resistance whatever will then be offered to the downward pressure of said springs. The posts will thus be moved downward with great velocity until the collars 69 strike the lower guides 76 and will carry therewith the front edge 73 of a horizontal apron 74, the rear end of said apron being hung by ropes or chains 75 from underneath the body of the car. The posts 70 move in lower bearings 76, in which



also are pivotally mounted the ends of the rock-shaft 55, and below said bearings 76 said posts are curved rearwardly, so that the front edge of the apron may be as far to the rear as may be desired. The apron 74 is preferably formed of stout wire-netting and the front margin 73 thereof of a strip of stout sheet-rubber supported on a flat steel strip 73'.

10 Inasmuch as a very slight rearward movement of the guard 60 is sufficient to throw the levers 67 and links 68 out of line and release the posts the movement of the apron downward to the ground is practically instantaneous upon the movement of the guard 60.

15 To assist in resetting the arms 64 so that the notches 65 engage the pins 66, each arm is extended forward to form a tapering nose 77, which rests upon a second pin 78. Thus in resetting all that is necessary is to raise the arm 64 so that the point of said nose 77 rests upon the pin 78 and then slide said arm rearward until the notch 65 engages the pin 66. Said nose also assists the arm in freeing itself from the pin 66, for when both the arm 64 and the foot of the lever 67 move rearwardly the notch 65 will be raised from off the pin 66.

When it is desired to lock the fender and render it inoperative, as when moving the car into the car-shop, the motorman pulls a handle 80 on a vertical shaft 81 behind the dashboard 82 of the car, rocking said shaft, and so moving a toe 83, which is rigidly secured on the lower end of said shaft, so that it comes over an arm 84, fixed on the rock-shaft 56, and prevents said arm from moving upward. When the motorman moves the handle 80 back, said arm 84 is released and said shaft 56 is permitted to rock. This also permits a second arm 85, extending forwardly from said shaft 55, to move downward from below an arm 86, extending from one of the arms 48, permitting the latter arm to move downward and the shaft 38 to be rocked. Thus the vertical shaft 81, through the intervention of the toe 83, locks both the apron 74 and the toggle-frames 15. A casting 90, in which both the rock-shafts 81 and 56 have bearings, gives additional support to the latter shaft.

50 In order to provide means for coupling the car to another car without removing the fender and also to enable one car to be moved up into contact with another, as in the car-house, without disabling the fender, there is provided an extensible draw-head or bumper 92, said bumper moving in a slide 93, extending beneath the car and out between ears 94 above and below the bumper. Said bumper 92 is provided with holes 95, one or more in number, at a suitable distance from the end of the bumper, and the ears 94 are provided with corresponding holes 96, so that the bumper can be secured in the desired extended position by inserting a coupling-pin 97 through said holes 95 96. Oblique guard-strips 98, extending forwardly from the steps 99 and the foot of the standards 1, prevent injury to a

person standing near the side of the track, as they throw him off the track.

I claim—

1. In a car-fender, the combination of standards, a net, a support extensible from said standards for the lower end of the net, a spring for extending said support, mechanism restraining said support from extension against the action of said spring, means for disengaging said restraining mechanism and permitting said extension, a lever-arm upwardly extending from said disengaging means, a horizontal extension on the free end of said arm, adapted by collision with an obstacle on the track to operate said disengaging means, and a support for the top of the net, substantially as described. 70 75 80

2. In a car-fender, the combination of a net, an extensible support for the lower end of the net, supports for the upper end of the net arranged to hold the net stretched or extended above its lower support to form a taut but flexible protecting-surface in advance of the dashboard, a spring for extending the support for the lower end of the net, means for restraining said support from extension against the action of said spring, means for disengaging said restraining means and permitting said extension, said disengaging means being arranged to be operated by collision thereof with a body on the track, and means for simultaneously removing the supports for the upper end of the net, permitting the same to fall, substantially as described. 85 90 95 100

3. In a car-fender, the combination of standards, a net, toggle-arms longitudinally extensible from said standards and supporting the lower end of the net, springs for extending said arms, mechanism restraining said arms against extension by said springs, means for disengaging said restraining mechanism and permitting said extension, said disengaging means being arranged to be operated by collision thereof with a body on the track, and a support for the top of the net, substantially as described. 105 110

4. In a car-fender, the combination of standards, a net, toggle-arms horizontally and longitudinally extensible from said standards and supporting the lower end of the net, springs for extending said arms, mechanism restraining said arms against extension by said springs, means for disengaging said restraining mechanism and permitting said extension, said disengaging means being arranged to be operated by collision thereof with a body on the track, and a support for the top of the net, substantially as described. 115 120 125

5. In a car-fender, the combination of standards, a net, vertically-disposed toggle-frame sections horizontally and longitudinally extensible from said standards, the inner sections having upper and lower pivotal connections with said standards, and the outer sections supporting the lower end of the net, springs interposed between the said upper 130



and lower pivotal connections and acting to extend said toggle-frames, mechanism restraining said frames against extension by said springs, means for disengaging said restraining mechanism and permitting said extension, said disengaging means being arranged to be operated by collision thereof with a body on the track, and a support for the top of the net, substantially as described.

6. In a car-fender, the combination of standards, a net, a vertically-disposed toggle-frame section horizontally and longitudinally extensible from each standard, the standard having upper and lower bearings for the inner section of said frame, lugs on said bearings, a spring interposed between said upper and lower bearings, one end of the spring engaging one of the lugs, and the other end engaging the inner section to extend the frame, and the other lug being arranged to engage the other end of said spring when said frame has been extended thereby, the outer section supporting the lower end of the net, mechanism restraining said frame against extension by said springs, means for disengaging said restraining mechanism and permitting said extension, said disengaging means being arranged to be operated by collision thereof with a body on the track, and a support for the top of the net, substantially as described.

7. In a car-fender, the combination of a net, an extensible support for the lower end of the net, a spring for extending said support, an arm extending rearwardly from said support, a dog pivoted on the rear end of said arm and extending forward therefrom, and an abutment against which the forward end of said dog rests, said arm being provided with an extension arranged to collide with a person on the track to shift said arm and release said support, substantially as described.

8. In a car-fender, the combination of a net, an extensible support for the lower end of the net, a spring for extending said support, toggle-links, normally in line or closed, resisting the extension of said support, and means, adapted to be operated by collision with a person on the track to open or spread said links and remove the resistance to said spring, substantially as described.

9. In a car-fender, the combination of a net, a rock-shaft supporting the lower end of the net, an extensible support for said rock-shaft, a spring for extending said support, toggle-links, normally in line or closed, resisting the extension of said support, and secured to said shaft, and an extension from said shaft adapted to be shifted by collision with a person on the track and rock said shaft to open or spread said links and remove the resistance to said spring, substantially as described.

10. In a car-fender, the combination of standards, a net, supports extensible from said standards for the lower end of the net, springs for extending said supports, mechanism restraining said supports from extension against the action of said springs, means

for disengaging said restraining mechanism and permitting said extension, said disengaging means being arranged to be operated by collision thereof with a body on the track and arms supporting the upper end of the net, pivoted on the standards, said arms being held in the position of support by the extensible supports when closed and released from said position when the extensible supports are extended, substantially as described.

11. In a car-fender, the combination of standards, a net, supports extensible from said standards for the lower end of the net, springs for extending said supports, mechanism restraining said supports from extension against the action of said springs, means for disengaging said restraining mechanism and permitting said extension, said disengaging means being arranged to be operated by collision thereof with a body on the track and toggle-links supporting the upper end of the net, said links being pivotally supported on the standards and having downward extensions coacting with the extensible supports whereby when the latter are extended the toggle-links collapse and the top of the net falls, substantially as described.

12. In a car-fender, the combination of standards, a net, vertically-disposed toggle-frame sections horizontally extensible from said standards and supporting the lower end of the net, springs for extending said toggle-frames, mechanism restraining said frames from extension against the action of said springs, means for disengaging said restraining mechanism and permitting said extension, said disengaging means being arranged to be operated by collision thereof with a body on the track, and toggle-links supporting the upper end of the net, said links being pivotally supported on the standards, and having downward extensions and dogs pivoted on the extensions engaging the upper chords of the inner frame-sections, thereby holding said links in the position of support when the toggle-frames are closed, but permitting said toggle-links to collapse when the frames are extended, substantially as described.

13. In a car-fender, the combination of a net or apron beneath the car, spring-actuated posts supporting the front end of the apron, horizontally-movable supports for said posts, and means, adapted to be operated by collision with a body on the track, for moving said supports horizontally from beneath said posts, substantially as described.

14. In a car-fender, the combination of an apron beneath the car, spring-actuated posts upholding the front end of the apron, toggle-links supporting the posts, and means, adapted to be operated by collision with a body on the track, for causing the toggle-links to collapse, substantially as described.

15. In a car-fender, the combination of an apron beneath the car, spring-actuated posts upholding the front end of the apron, toggle-links supporting the posts, the lower links ex-



tending below their pivots, a guard or rail movably mounted on a forward extension of the car, and links connecting the guard and the lower toggle-links, whereby a rearward  
5 movement of said guard is communicated to said toggle-links to cause the same to collapse, substantially as described.

16. In a car-fender, the combination of a net, an extensible support for the lower end of the  
10 net, a spring for extending said support, a device for restraining said support against extension by said spring, means for withdrawing said device adapted to be operated by collision with a person on the track, an apron  
15 beneath the car, spring-actuated posts upholding the front end of the apron, supports for said posts, and a guard supported on the extensible net-support and operatively connected with the post-supports to withdraw the  
20 same, substantially as described.

17. In a car-fender, the combination of a net in front of the car, an apron beneath the car, supports for the net and apron, a spring for projecting the net, a spring for depressing  
25 the apron, restraining devices for said springs, rock-shafts for actuating said devices, said shafts having interlocking mechanism, and a

device for locking one of said shafts, whereby the other is also locked through the interlocking mechanism, substantially as described. 30

18. The combination, with a car, of a draw-bar, and a guide beneath the car in which said draw-bar slides, said car having apertured ears projecting at the mouth of said guide and said draw-bar being apertured at two or more  
35 points to receive a pin therethrough and through said ears, whereby said draw-bar may be adjustably held beneath said car, substantially as described.

19. In a car-fender, the combination, with  
40 a fender and means for automatically projecting the same on collision with a body on the track, of equalizing-rods sliding in bearings beneath the car at each side thereof, said rods being connected across the car to move  
45 forward in unison, substantially as described.

In witness whereof I have hereunto set my hand in the presence of two subscribing witnesses.

GEORGE RISCHMÜLLER.

Witnesses:

FRANCIS M. WRIGHT,  
CHAS. W. SMYTH.