

No. 771,476.

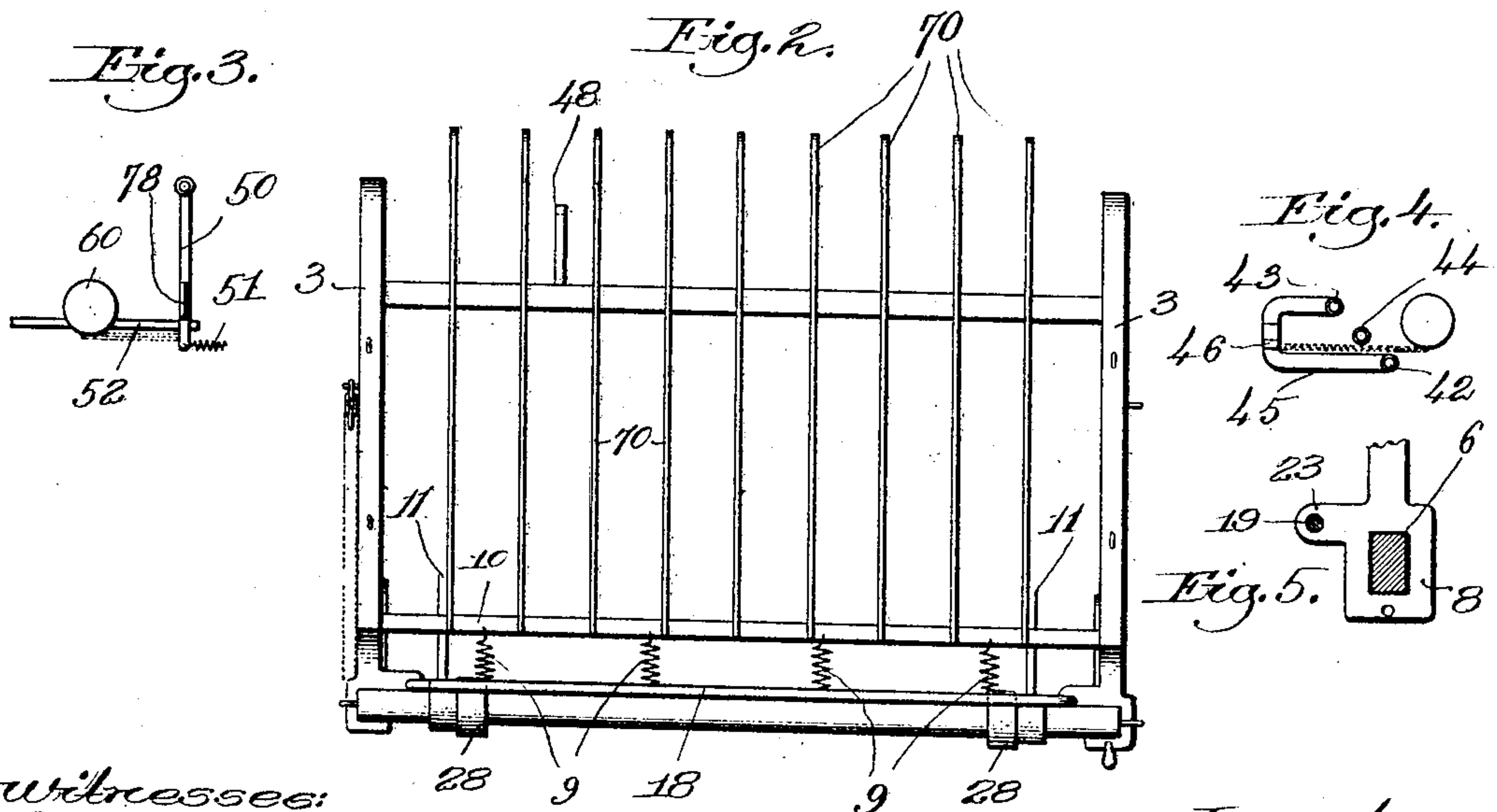
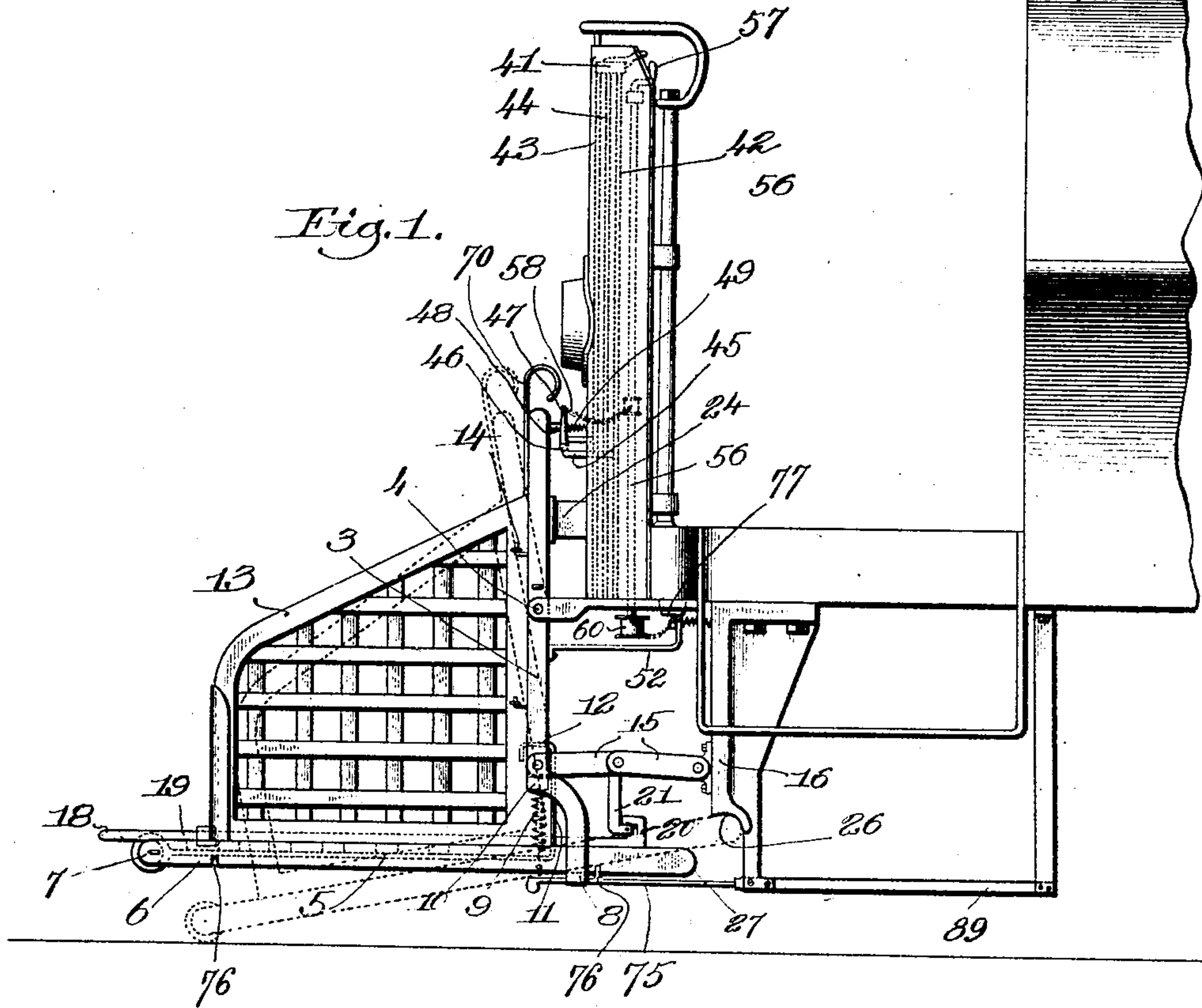
PATENTED OCT. 4, 1904.

F. R. KEITH.
CAR FENDER.

APPLICATION FILED FEB. 3, 1904.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses:
Fred S. Grunlof
Thomas Drummond

Inventor:
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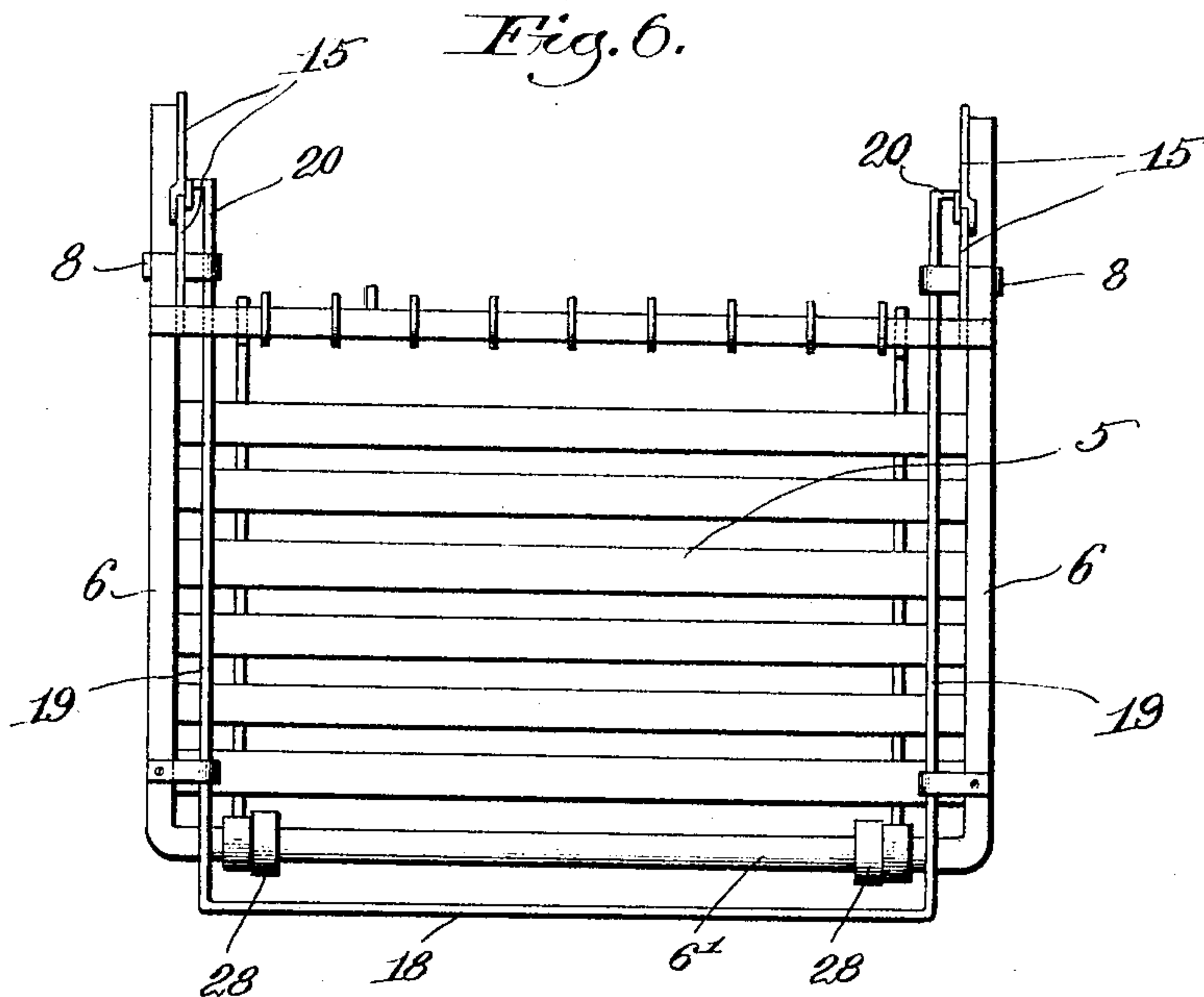


Fig. 7.

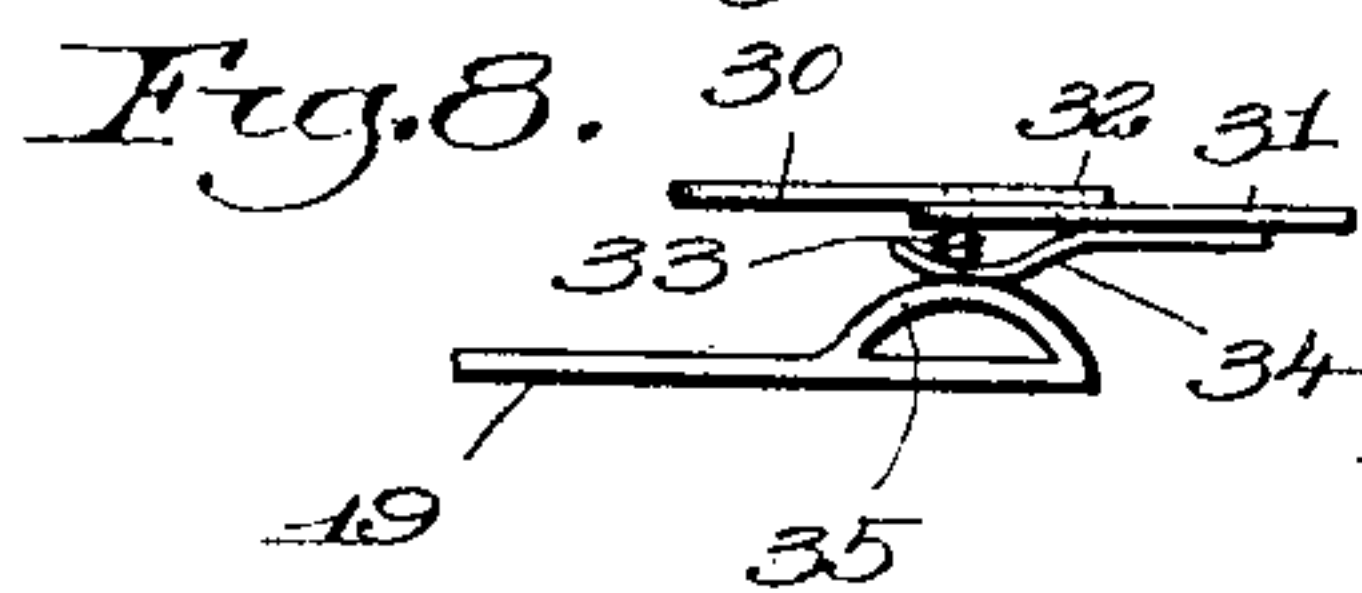
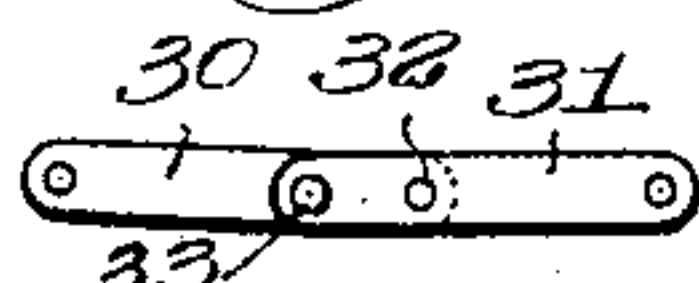
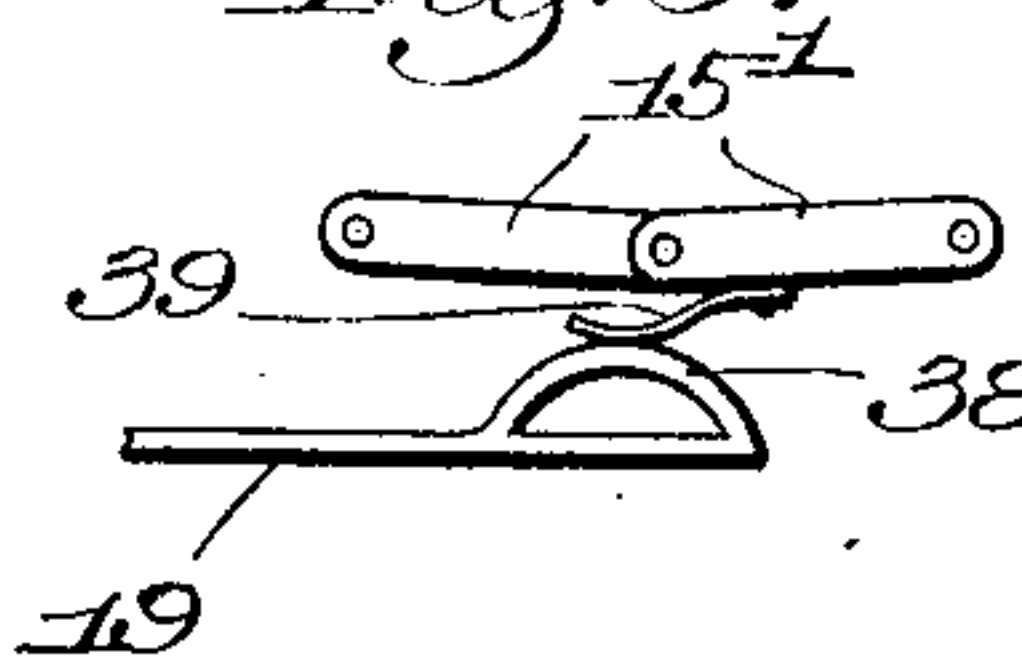


Fig. 9.



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UNITED STATES PATENT OFFICE.

FREDERICK R. KEITH, OF RANDOLPH, MASSACHUSETTS.

CAR-FENDER.

SPECIFICATION forming part of Letters Patent No. 771,476, dated October 4, 1904.

Application filed February 3, 1904. Serial No. 191,787. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK R. KEITH, a citizen of the United States, and a resident of Randolph, county of Norfolk, State of Massachusetts, have invented an Improvement in Car-Fenders, of which the following description, in connection with the accompanying drawings, is a specification, like numerals on the drawings representing like parts.

This invention relates to car-fenders, and has for its object to improve the fender illustrated in my Patent No. 743,181, dated July 21, 1903, and in my copending application, Serial No. 162,586, filed June 22, 1903, the improvements consisting in novel lock for holding the fender in its raised position and in an improved means whereby the dropping of the fender in its lowered position when it strikes an obstacle operates to apply the air-brakes and simultaneously cut the current from the motor.

The improved lock which I employ is in the nature of a toggle-lever, which when straightened holds the nose of the fender elevated, and a movable nose-bar projecting beyond the nose of the fender and having extensions which engage and hold the toggle-levers in their straightened position. Whenever the nose-bar strikes an obstacle on the track, its movement with reference to the fender releases the toggle-levers and allows them to buckle, thus permitting the nose of the fender to drop on the track. This movement of the fender simultaneously cuts the motor out and applies the air-brake, as will be more fully hereinafter described.

In the drawings, Figure 1 is a side view of my improved fender. Fig. 2 is a front view thereof. Fig. 3 is a detail of the switch-controlling means. Fig. 4 is a detail of the means for controlling the air-brake. Fig. 5 is a detail hereinafter described. Fig. 6 is a top plan view. Figs. 7, 8, and 9 are details showing different forms of my invention.

The fender comprises a back frame 3, which is pivoted to the car-body in any suitable way, as at 4, and a bottom 5, which is pivoted at its forward end, as at 7, to the side bars 6, which are supported at their rear ends in eyes or guides 8 at the lower end of the back frame

3. These features are substantially as illustrated in my above-mentioned application, except that the side bars 6 have integral therewith the cross-bar 6', to which the bottom 5 is pivoted. The rear end of the bottom 5 is normally supported by suitable springs 9, which are attached at one end to the bottom and at the other to a cross-piece 10, extending across the back. Said bottom has the upwardly-projecting arms 11, provided at their upper ends with the hook portions 12, which extend over the cross-bar 10, said hook portions operating to limit the downward movement of the fender-bottom when an object is thrown into it.

13 designates the sides of the fender, which are preferably removably attached to the back frame 3 by any suitable means, as by hooks and eyes 14, this construction being similar to that in my before-mentioned application.

The fender is held elevated from the track by means of toggle-levers 15, which are pivoted at one end to the frame 3 and at the other end to a bumper or stop 16, carried by the car-body. The toggle-levers may be held in their straightened or operative position in various ways; but it is my intention to employ for this purpose a movable releasing device which extends across the front of the fender in advance of the fender-nose and constitutes a nose-bar with which the obstacle or person struck by the fender comes in contact. In the form of my invention shown in Figs. 1 and 2 this releasing device comprises the nose-bar 18, extending across the fender in advance of the nose thereof and having at each end the rearwardly-projecting arms 19, which terminate in hooks 20, adapted to engage hooked fingers 21, depending from the toggle-levers. The arms 19 of the releasing device may be guided in any suitable way, preferably by providing the bearing 8 with a projection 23, having a hole through which said arms pass, as seen in Fig. 5. If desired, the bearing 23 may be provided with ball-bearings on which the arms 19 rest in order to make the movement of the releasing device as easy as possible. I also prefer to provide either the hook 21 or the hooked finger 22 with a roller which engages the other member, so as to reduce friction be-

tween these parts to a minimum. 24 designates a stop against which the frame 3 rests when the fender is held in its elevated position. The toggle-lever 15 is so arranged that when
 5 the fender is thus held elevated and engages the stop 24 said arms are nearly but not quite straightened, as seen in Fig. 1. With this construction it will be seen that whenever the
 10 nose-bar 18 meets an obstacle the releasing member will be moved backwardly and the hooks 20 disengaged from the fingers 21. The weight of the fender then causes it to drop into the dotted-line position, Fig. 1, the toggle-levers 15 buckling to permit such movement.
 15 I will preferably construct the bumper 16 so that it will be engaged by the end 27 of the side bars 6 when the fender is dropped.

28 designates rolls on the front of the fender, which meet and travel on the rails when
 20 the fender has dropped.

In Figs. 7 and 8 I have illustrated a slightly-different arrangement of toggle-lever and one which buckles downwardly instead of upwardly. The two members of the toggle-lever
 25 are designated by 30 and 31, one of said members being pivoted to the bumper 16 and the other to the fender-frame. The member 31 extends beyond the point 32, where said members are pivoted, and such extended portion carries a locking-pin 33, which is adapted
 30 to engage an aperture in the member 30 and lock the two members in their straightened position. Said locking-pin 33 is preferably carried by a leaf-spring member 34, rigidly
 35 secured to the arm 31, said spring member being so constructed as normally to tend to withdraw the locking-pin from the member 30. The pin is held in its locking position by the swelled portion 35 at the end of the
 40 lock or arm 19 of the releasing member. With this construction the backward movement of the releasing member, caused by an obstacle striking against it, forces the swell portion 35 out of engagement with the swell
 45 portion of the spring 34, thereby permitting the latter to withdraw the locking-pin from the member 30. When this occurs, the toggle-lever will buckle, as above described, and permit the fender to drop.

50 In Fig. 9 the toggle-lever 15' is adapted to buckle downwardly and is held from such movement by the swell portion 38 on the end of the arm 19, which engages the member 39 on one arm of the toggle-lever. The backward movement of the releasing member will
 55 withdraw the support 38 from the toggle-lever and will allow it to buckle, as above described.

Various other ways of releasing the fender
 60 than that described may be employed without departing from my invention in any way.

41 designates the ordinary motorman's valve for controlling the air-brakes. 42 designates the pipe leading from said valve to the air-
 65 reservoir; 43, the pipe leading from said valve

to the brake-cylinder, and 44 the exhaust-pipe, these parts being all as usually arranged in electric cars.

45 designates a by-pass connecting pipes 42 and 43, and 46 is a valve in said pipe having a handle or stem 47, which is engaged by
 70 a finger or projection 48 on the fender when the latter is in its elevated position, as seen in Fig. 1, said finger operating by its engagement with the handle to hold the valve closed.
 75 A suitable spring 49 acting against the valve-handle holds it against the projection 48, and when the fender has been dropped in its lowest position, as above described, and the support 48 for the handle is thus removed said
 80 spring operates to open the valve, and thereby let air into the brake-cylinder from the pipe 42. This same movement of the fender operates to cut the motor out by the following operation: A suitable switch controls
 85 the circuit including the motor, and said switch has an operating handle or lever 50, to which is connected a suitable spring 51, tending normally to throw the lever into such a
 90 position as to open the switch. This movement of the operating-lever is normally prevented by an arm 52, carried by the fender and having its end bent to stand in the path of the lever. When, however, the fender
 95 drops into its lowered position, the arm 52 is moved out of the path of the lever 50, and the spring 51 throws the lever to open the switch, and thus cut the motor out. The switch may be of any approved kind. That
 100 herein shown comprises a contact 77 on the car, which coöperates with a contact 78 on the lever 50. When the brake has thus been applied and the motor cut out, the motorman has lost entire control of the car. In order
 105 to permit him to regain control again before the fender is raised, I employ a crank-shaft 56, having a crank 57 in its upper end and connected to both the valve and operating-handle by means of a flexible connection,
 110 whereby when the crank-shaft is turned said flexible connections are wound thereon and the valve closed and the switch-lever thrown into its normal position. As herein illustrated, 58 designates the flexible connection between the valve and shaft 56, said connection
 115 being secured to the arm 47 of the valve or to another arm projecting therefrom and to the shaft 56. 60 designates another flexible connection, secured at one end of the lever 50 and at the other to said shaft 56. Both of
 120 said connections are so arranged that the turning of the shaft winds them thereon, and thus restores the valve and switch to their normal positions.

In this form of my invention, as well as that
 125 illustrated in my copending application, the fender is positively and rigidly held in its elevated position by the locking means, and therefore while elevated has no movement relative
 130 to the car-body, as is the case where yielding

means are employed to hold the fender elevated. This being so, there is no necessity for any direct action between the valve and the fender, and the valve can be held closed merely
5 by having its handle rest against the fender.

The side bars 6 of the fender-bottom are slidably mounted in bearings 8, as in my prior application, so that when the sides 13 of the fender are removed the entire fender-bottom
10 can be slid in under the car-body when said fender is not in use. To lock the fender-bottom in its extended or retracted position, I have provided a locking member 75, which is adapted to engage locking-notches 76 in the
15 side bars 6.

I do not herein claim, broadly, an air-brake mechanism operated by the fender, as such is not new with me; but what I do regard as novel is the particular way in which the valve
20 is held closed and the means employed for enabling the motorman to gain control again of both the air-brake and the motor.

The back of the fender is preferably constructed of a plurality of elastic metal strips
25 70, which extend above the back frame 3, as seen in Fig. 1.

89 designates a support on which the fender-bottom may rest when in its retracted position.

30 Although I have illustrated some forms in which my invention may be embodied, I do not wish to be limited thereto, as various changes in the location and arrangement of the parts may be made without in any way affecting the invention described in the appended claims.

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

40 1. In a car-fender, a fender-body pivoted to the car, a toggle-lever connected to the fender to hold the latter elevated when said lever is substantially straight, and automatic means to release the toggle when the fender strikes
45 an obstacle.

2. In a car-fender, a fender-body hinged to a car, a toggle-lever device to positively hold said fender in a fixed position with relation to the car and with its nose elevated, and automatic
50 means to release the toggle-lever when the fender strikes an obstacle.

3. A car-fender, means to pivot it to a car-body, a toggle-lever-locking device to hold the nose of the fender elevated, a nose-bar extending across the front of the fender and movable with relation to the latter, and means
55 whereby the movement of said nose-bar with relation to the fender releases the locking device and allows the nose of the fender to swing downwardly.

4. A car-fender, means to pivot it to a car-body, a toggle-lever connected to the fender and operating to hold the latter elevated when said lever is substantially straightened, and a
65 releasing device to hold said toggle-lever in

its straightened position, said releasing device having a portion situated in front of the fender.

5. A car-fender, means to pivot it to a car-body, a toggle-lever device to hold the nose of
70 the fender elevated, and automatic means to release said toggle, said means comprising arms slidably mounted on the fender and constructed to engage the toggle and hold the latter straightened, and a nose-bar connecting
75 said arms and situated beyond the nose of the fender.

6. A car-fender hinged to a car, locking means to hold positively said fender in a fixed position with relation to the car and with its
80 nose elevated, automatic means to release said locking means when the fender strikes an obstacle, combined with brake-actuating mechanism controlled by the fender.

7. A car-fender hinged to a car, locking
85 means to hold positively said fender in a fixed position with relation to the car and with its nose elevated, automatic means to release said locking means when the fender strikes an obstacle, combined with switch-operating mechanism for the motor controlled by the fender.

8. A car-fender hinged to a car, locking means to hold positively said fender in a fixed position with relation to the car and with its
90 nose elevated, automatic means to release said locking means when the fender strikes an obstacle, combined with brake-operating mechanism and switch-operating mechanism for the motor both controlled by the fender.

9. In a device of the class described, a car-
100 fender pivoted to a car, a valve controlling the passage between the reservoir and brake-cylinder and held closed by the fender when the latter is raised, combined with automatically-operative means to open the valve when
105 the fender drops.

10. In a device of the class described, a fender hinged to a car, means to hold said fender elevated, automatic means to release the fender when an obstacle is struck, a valve controlling
110 the supply of air to the brake-cylinder, said valve being held closed by the fender when the latter is elevated, and automatically-operated means to open the valve when the fender is released.

11. A car-fender hinged to a car, a switch-operating arm controlling the switch for the car-motor, said arm being held in position to close the switch by the fender when the latter
120 is elevated, and automatically-operative means to throw said arm to open the switch when the fender drops.

12. A car-fender hinged to a car, locking means to hold said fender positively elevated, automatic means to release said locking means
125 when the fender strikes an obstacle, a switch-operating arm restrained from movement by the fender when the latter is elevated, and automatically-operated means to turn said arm to open the switch when the fender is released.

130

13. A car-fender pivoted to a car, a valve controlling the admission of air to the brake-cylinder, a switch-operating arm controlling the switch for the motor, both said valve and
5 switch-operating arm being restrained from movement by the fender when the latter is elevated, and automatically-operated means to open the valve and switch when the fender rocks.
- 10 14. A car-fender having a back portion hinged to a car-body, and a bottom portion slidably mounted in the back portion, and a locking member coöperating with the bottom portion and serving to lock the fender-bottom in its extended or retracted position. 15

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

FREDERICK R. KEITH.

Witnesses:

LOUIS C. SMITH,
JOHN C. EDWARDS.