

Feb. 25, 1930.

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1,748,371

AUTOMATIC BUMPER AND BODY CATCHER

Filed July 22, 1929

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Fig. 1.

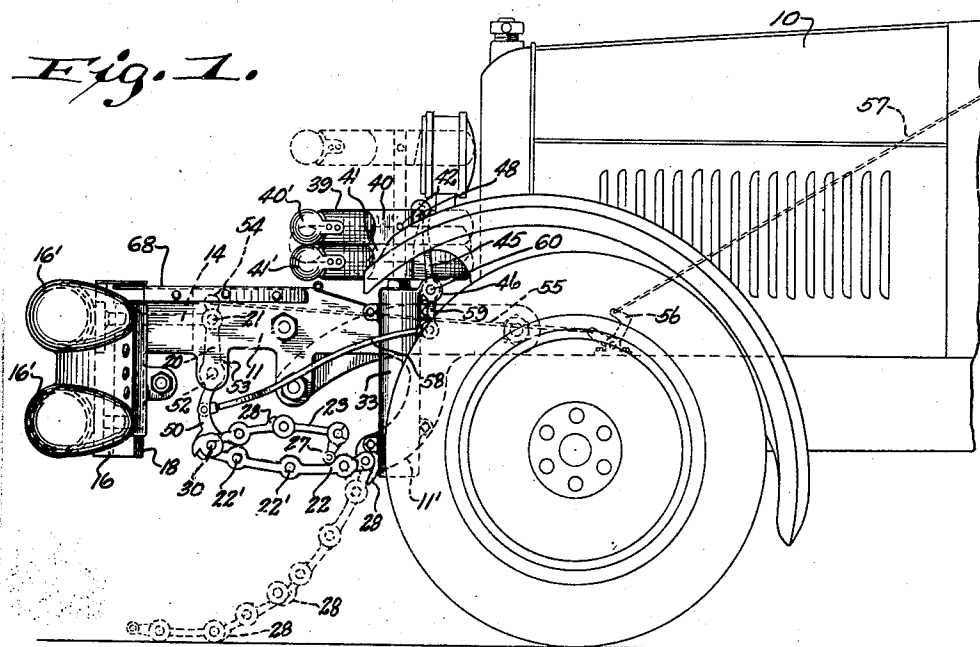
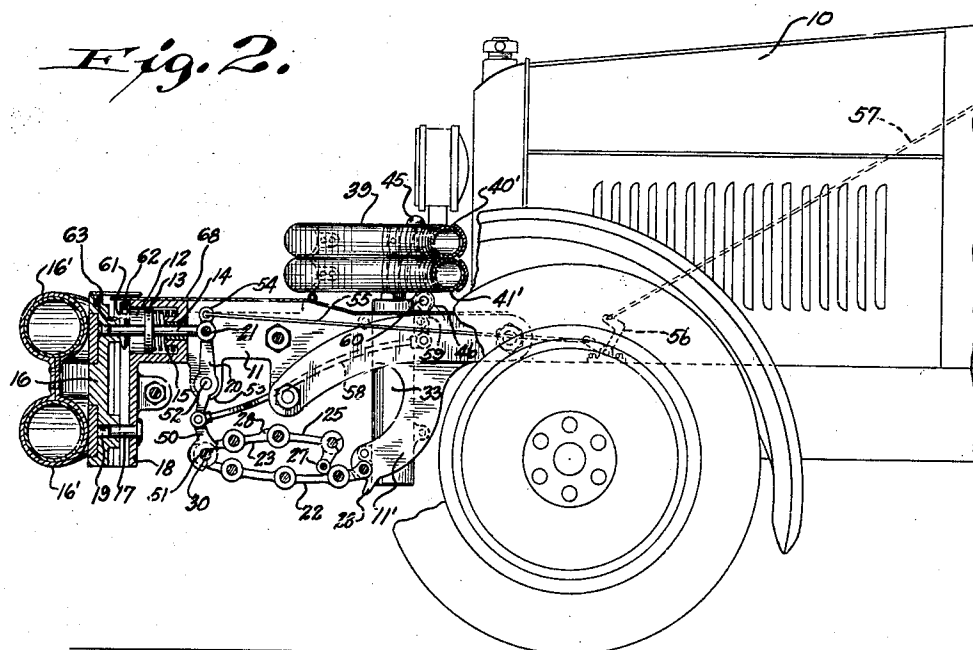


Fig. 2.



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Fig. 3.

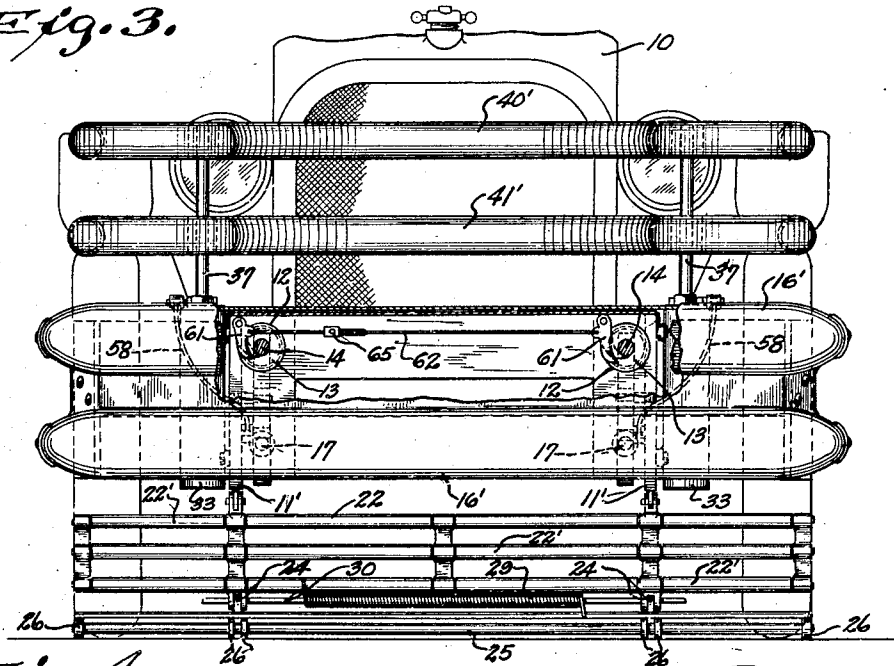
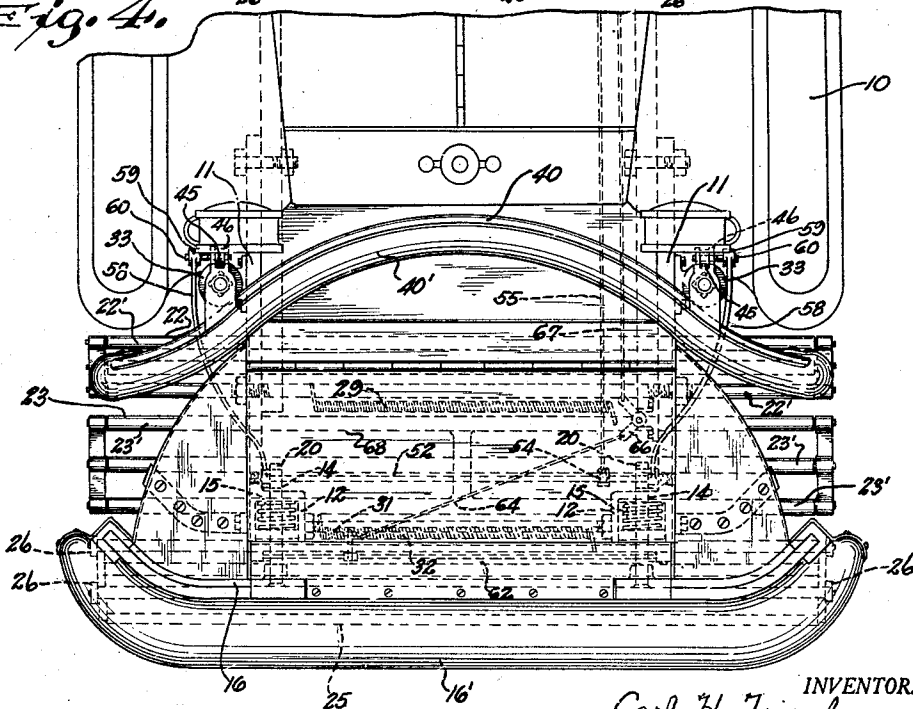


Fig. 4.



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Fig. 6.

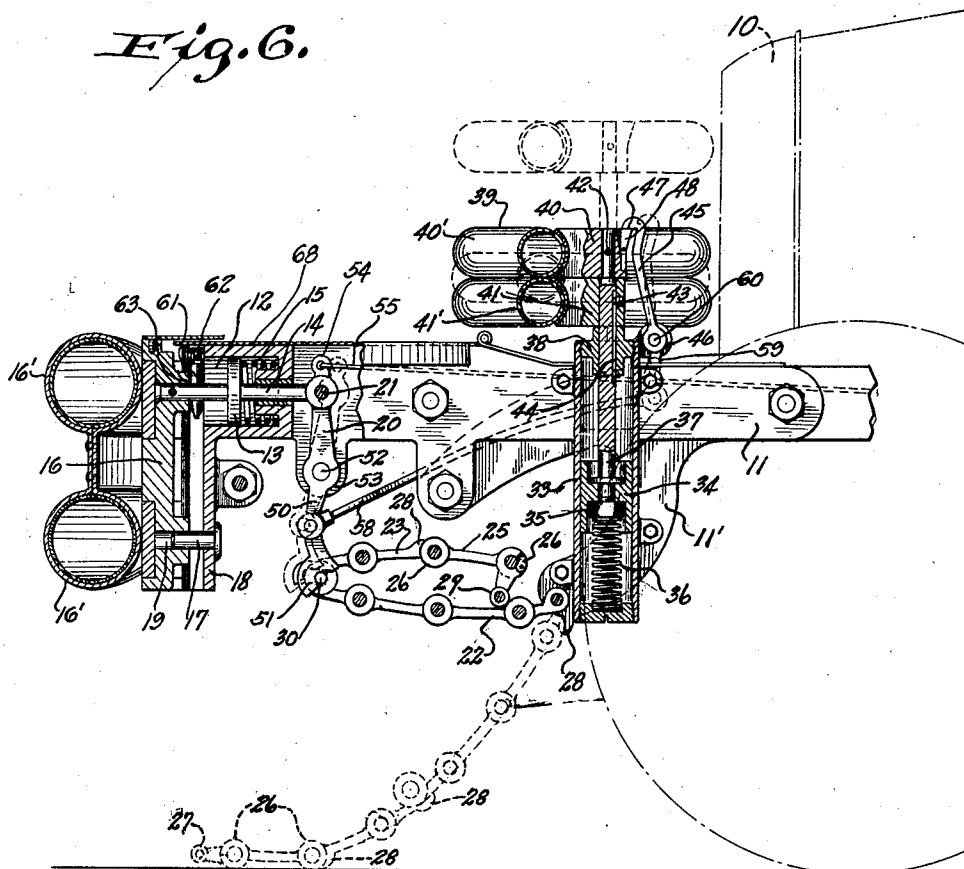
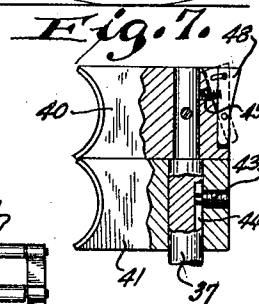
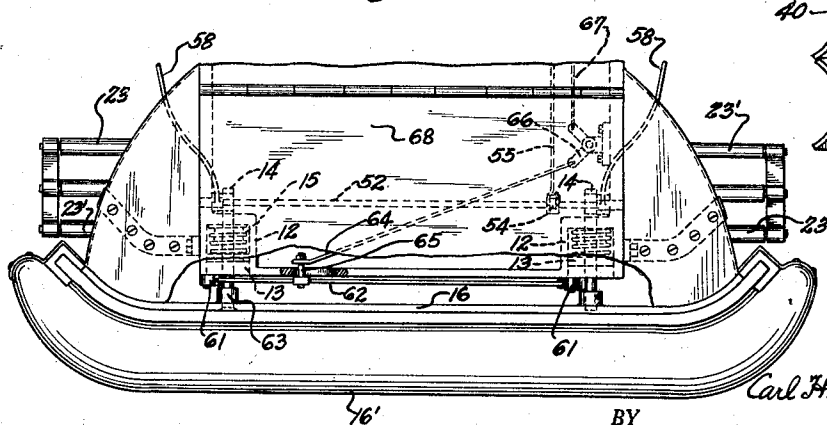


Fig. 5.



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AUTOMATIC BUMPER AND BODY CATCHER

Application filed July 22, 1929. Serial No. 380,041.

This invention relates to improvements in automatic bumpers and body catchers.

It is one of the objects of the present invention to provide an automatic fender for self-propelled vehicles which will be instantly moved from a compact inoperative position to an extended operative position upon a portion thereof coming in contact with an obstruction.

A further object of the invention is to provide a device of the character described which in addition to being automatically operated by contact, may be manually operated from the driver's seat of the vehicle, or other convenient point remote from the bumper.

A further object of the invention is to provide a device of the character described which may be easily attached to all types of motor vehicles and propelled carriers, and which is neat and attractive in appearance and does not detract from the appearance of the vehicle.

A further object of the invention is to provide a spring controlled device of the character described which will cushion the shock or impact when a collision occurs.

A further object of the invention is to provide an automatic bumper and body catcher in which the latter portion is normally folded and concealed in flexible sections back of and below the bumper portion.

A further object of the invention is to provide a device of the character described in which the body catcher, when released, instantaneously and automatically unfolds, descends and adjusts itself to road conditions and paving level, traveling thereon by means of roller bars, below the bumper, screening the entire road-width of the car, including the wheels.

A further object of the invention is to provide a device of the character described in which the body catcher is so constructed that when it is extended to operative position, it cannot buckle or jam backwardly, and which will automatically adjust itself to an uneven road bed.

A further object of the invention is to provide a device of the character described which

will not interfere with manual cranking of the vehicle.

A further object of the invention is to provide an upper cushioned member operatively associated with the bumper and the lower body catcher or fender and arranged so that upon an operative contact by the bumper, said upper cushioned member will immediately be projected upwardly to a guarding position in front of the vehicle radiator, to prevent, if a person is thrown upwardly by the bumper, his being injuriously struck by the radiator front.

A further object of the invention is to provide a locking arrangement which may be set or released from the dash of the vehicle, whereby the bumper, fender and guard may be locked in their normal positions against being sprung, which feature is desirable when the vehicle is parked and might be subjected to a slight bump from another vehicle, and in such event it would be unnecessary and inconvenient for the bumper, fender and guard to be released and moved to operative positions.

A further object of the invention is to provide an automatic bumper and body catcher of the class described in which the bumper bars and the radiator guard bars are of a pneumatic cushion arrangement, whereby the impulse of a body thereagainst will be materially cushioned.

A further object of the invention is to provide an automatic bumper and body catcher which is of very simple construction, is efficient and automatic in its operation, is strong and durable and is well adapted for the purposes described.

With the above and other objects in view, the invention consists of the improved automatic bumper and body catcher, and its parts and combinations as set forth in the claims, and all equivalents thereof.

In the accompanying drawings in which the same reference characters indicate the same parts in all of the views:

Fig. 1 is a side view of the front portion of a vehicle equipped with the improved automatic bumper and body catcher, there also being dotted line showings of the body

catcher and guard in operative, released positions;

Fig. 2 is a view similar to Fig. 1, with portions of the device shown in section;

Fig. 3 is a front view of the vehicle and device connected thereto, with the body catcher and guard shown in operative positions, there also being portions broken away and in section to show details of construction;

Fig. 4 is a plan view thereof;

Fig. 5 is a plan view of a portion of the device with portions broken away and in section to show the means for releasably locking the parts in normal or "set" positions;

Fig. 6 is a vertical sectional view of the device showing particularly the guard holding and operating mechanism, and on a larger scale; and

Fig. 7 is an enlarged detail view, partly in section, of the latch means for normally holding the guard in its lowered, "set" position.

Referring now to the accompanying drawings, it will appear that the numeral 10 designates a motor vehicle having secured to the front portion of its frame a pair of forwardly projecting arms 11. The forward portion of each arm is enlarged and bored to form a cylinder 12. A piston 13 is mounted in each cylinder on an extended rod 14 and said piston is adapted to move inwardly in the cylinder against the tension of a coiled spring 15. The forward ends of the piston rods 14 are secured to and yieldingly support end portions of a bumper or buffer frame 16, and the individual buffer bars or members 16' are of a pneumatic, cushioned construction to absorb a portion of the shock when an obstruction or body is struck. The buffer 16 is also supported by means of studs 17 secured to and projecting from the flanged portions 18 of the cylinders 12, said studs entering bores 19 therefor in the buffer frame. Normally, the buffer is supported slightly outwardly from the cylinders 12 and flange 18, as shown in Figs. 2 and 6. However, if the buffer strikes an obstruction, it will move inwardly slightly, against the tension of the springs 15, and the inner ends of the rods 14 will pivot cranks 20 secured thereto by pivot studs 21.

The arms 11 extending from the forward portion of the vehicle are also formed with integral, curved, downwardly and forwardly projecting extensions 11' which have pivotally secured thereto the inner section 22 of a foldable body catcher or fender. Said fender section extends transversely across the front of the vehicle, terminating at the outer edges of the vehicle wheels, and is formed of a plurality of spaced roller bars 22'. A forward fender section 23 is pivotally secured to the forward end portion of the section 22

by links 24, and said section 23 is also formed of spaced roller bars 23'. There is also foldably or pivotally secured to the forward end portion of the fender section 23 a narrow leader section 25 formed with ground engaging rollers 26 and forward, normally slightly raised rollers 27. The sections 22 and 23, and the ends of the arms 11' are provided with lugs 28 which engage adjacent portions of adjacent sections to prevent buckling, when the fender is in its lowered, operative position, and to limit the folding movements of the sections.

It should be observed that a spring 29 is coiled about a pivot rod 30 on which the sections 22 and 23 fold with respect to each other, and the end portions of the spring yieldingly engage respectively bars of the sections 22 and 23, and between the fender sections 23 and 25 there is a similarly arranged spring 31 on a pivot rod 32. Said springs serve to put the fender sections under tension when they are extended to prevent any folding tendency of the sections when in road contact.

There are secured to outer intermediate side portions of the arms 11 a pair of opposed, vertically positioned cylinders 33, and in the bore of each cylinder is slidably mounted a piston 34 having a recess 35 in its lower end portion to receive the upper end portion of an expansive spring 36 confined between the piston and the bottom of the cylinder, to exert a raising force on the piston. Each piston carries an upwardly projecting piston rod 37 extending upwardly, outwardly through an opening in a bushing 38 closing the upper end of its cylinder.

Adapted to be vertically movably carried by outer end portions of the pair of piston rods 37 is a radiator guard, designated generally by the numeral 39. Said guard comprises a pair of curved frames 40 and 41 extended transversely across the front of the vehicle, and each frame carries a pneumatic cushion member or pad, 40' and 41', respectively. The upper guard frame 40 is pinned to the piston rods 37, as at 42, so as to move vertically therewith, while the piston rods extend slidably through the lower guard frame 41, said guard frame having a limited free sliding movement thereon. The piston rods are prevented from turning by inwardly projecting studs 43 in the frame 41 vertically slidably engaging slots 44 in said piston rods, and upon upward movements of said piston rods when the lower ends of the slots engage said studs, the frame 41 will be moved upwardly a short distance to the dotted line position in Figs. 1 and 6, the raised position of the upper frame 40 also being shown in said views.

The frames 40 and 41 and the piston rods 37 are normally held in their lowered positions by means of a pair of hook members 45

which are pivotally mounted on lugs 46 extending laterally from the upper portions of the cylinders 33. The flat surfaces 47 of the hook portions of said members 45 rest on the upper surfaces of wedge-shaped dogs 48 pivotally mounted within recesses in the guard frame 40. In Fig. 7 there is a detailed showing of a mounting of a dog 48 and the latter is normally held in the full line position by a spring 49 bearing thereagainst. However, when the frame 40 is pushed down, as when the hooks 45 are to be "set," the hooks will slide against the edges of said members 48, and to permit clearance the dogs will move inwardly against their springs until the heads of the hooks have cleared and engage the top portions of said dogs.

In normal use, the buffer, the fender and the radiator guard are positioned as shown in Figs. 1, 2 and 6 in full lines, with the fender sections folded and the guard frames in their lowered positions. The fender sections are releasably held in this position by a pair of opposed arms or triggers 50 formed with recesses 51 which engage and hold the pivot rod 30 when said triggers are in normal position. Said triggers 50 are formed integral with the pivot cranks 20 and said combined cranks and triggers are medially pivotally mounted on a transverse pivot rod 52 journaled at its end portions in the lug portions 53 of the supporting arms 11.

A lever 54 is also carried fast by the pivot rod 52 and said lever is connected by means of a cable or rod 55 with a bell crank lever 56 pivotally mounted on a portion of the frame of the vehicle, as shown in Figs. 1 and 2. Said bell crank lever in turn has attached thereto one end of a connection 57 which extends up to the instrument board or adjacent the driver's seat. Hence, by means of the members 51, 56, 55 and 54, the driver of the vehicle may manually operate the triggers 50 to release and drop the fender, when necessary, and also raise the radiator guard, and this may be done independently of any action on the buffer.

Release of the fender by the bumper, whereby the fender is automatically dropped to the dotted line position in Figs. 1 and 6, is accomplished by an impact against the buffer bars when an object is struck. Force exerted against the buffer bars will cause the rods 14 and pistons 13 to move inwardly within their cylinders 12 against the tension of the springs 15, and said movement of the rods 14 will cause the members 20—50 to move to releasing positions, allowing the fender to drop and unfold. At the same time, a pair of rods 58 connected to cranks 59 fast on the pivot rods 60, on which the hook members 45 are mounted, are pulled forwardly, causing said hook members to be pivotally moved to a position of disengagement with respect to the dogs 48, whereupon the expansive force of

the springs 36 will cause the pistons 34 and piston rods 37 to be projected upwardly, raising the guard frames, as previously mentioned.

As impacts against the buffer will automatically cause the fender and radiator guard to be released, it is desirable to provide means for preventing this action when the vehicle is "parked", or while it is being "parked" and might be subjected to slight bumps by other vehicles. This is accomplished by means of a pair of pivotally mounted locking elements 61 connected by a rod 62, and adapted when moved in one direction, to occupy space between the buffer frame bosses 63 and the front portions of the cylinders 12, whereby inward movement of the buffer, and the consequent movement of the rods 14 and release of the fender and radiator guard, is prevented. Said locking elements 61 are manually operated by a rod 64 connected to the rod 62, as at 65, and the inner end portion of the rod 64 is connected to one arm of a bell crank lever 66 mounted on one of the supporting arms 11. Extending to the driver's position of the vehicle from the other arm of said bell crank lever is an operating rod 67. Hence, when the operating rod 67 is pulled, the locking elements are pivotally moved to their interposed, operative positions, preventing releasing of the fender and guard, while when the rod 67 is pushed, said locking elements will be moved to their inoperative positions, shown in full lines in Fig. 3.

The space between the two arms 11 from the rear of the buffer to the front of the radiator is closed by a plate 68 which acts as a catcher for bodies which might be thrown over the top of the buffer, and the radiator guard prevents bodies so thrown from being injured by hard contact with the front of the radiator.

From the foregoing description, it will be seen that the improved automatic bumper and body catcher is both simple and novel, and is well adapted for the purposes described.

What I claim as my invention is:

1. In combination with a vehicle, a buffer yieldingly supported forwardly of the vehicle, a sectional fender mounted forwardly of the vehicle, releasable means for normally holding said fender in a folded, raised position, a vertically movable guard positioned across the front of the vehicle and rearwardly of the buffer, means for automatically projecting said guard upwardly, means for normally, releasably holding said guard in a lowered position, and connections between said buffer and both the fender holding means and the guard holding means whereby both of the holding means will release the members held thereby upon an inward movement of the buffer caused by an impact thereagainst.

2. In combination with a vehicle, a pneumatic buffer yieldingly supported forwardly

of the vehicle, a sectional fender mounted forwardly of the vehicle, releasable means for normally holding said fender in a folded, raised position, a vertically movable guard positioned across the front of the vehicle and rearwardly of the buffer, said guard being formed of a pair of independently movable pneumatic bars, means for automatically projecting said guard upwardly, means for normally, releasably holding said guard in a lowered position, and connections between said buffer and both the fender holding means and the guard holding means whereby both of the holding means will release the members held thereby upon an inward movement of the buffer caused by an impact thereagainst.

3. In combination with a vehicle, a buffer yieldingly supported forwardly of the vehicle, a sectional fender mounted forwardly of the vehicle, releasable means for normally holding said fender in a folded, raised position, a vertically movable guard positioned across the front of the vehicle and rearwardly of the buffer, means for automatically projecting said guard upwardly, means for normally, releasably holding said guard in a lowered position, connections between said buffer and both the fender holding means and the guard holding means whereby both of the holding means will release the members held thereby upon an inward movement of the buffer caused by an impact thereagainst, and manually operated means for preventing automatic operation of both of said holding means and the release of the members held thereby.

4. In combination with a vehicle, a pair of arms secured thereto, a buffer yieldingly carried by said arms, a pair of opposed and connected trigger members, a sectional fender normally intermediately engaged and held in a folded horizontal position by said opposed trigger members rearwardly of and below said buffer, a vertically movable guard positioned across the front of the vehicle and rearwardly of the buffer, means for automatically projecting said guard upwardly, latch means for normally, releasably holding said guard in a lowered position, and mechanism connected with said trigger members and with said latch and operated by an inward movement of any portion of the buffer for simultaneously moving the trigger members and the latch to release the fender and guard.

5. In combination with a vehicle, a pair of arms secured thereto, the forward portions of said arms being formed with cylinders, a buffer extending transversely with respect to said arms, pistons carried by said buffer and operable in said cylinders, coiled springs confined in said cylinders and exerting an outward force against said pistons, a rod journaled in said arms, a pair of opposed

triggers carried by said rod, connections between the triggers and pistons for moving the triggers to a releasing position upon on inward movement of a piston, a sectional fender normally engaged and held in a folded position by said trigger members rearwardly of and below said buffer, yielding means between pairs of the fender sections and engaging adjacent sections to prevent the same from buckling when the fender is in open position, a vertically movable guard extended transversely across the front of the vehicle and rearwardly of the buffer, spring means for urging said guard upwardly, latch means for normally holding said guard downwardly against the tension of said spring means, a lever between said latch means and said rod for releasing the latch when the rod is turned, auxiliary means connected with said rod for manually turning the same to cause the fender and guard to be released, and manually operated means for preventing inward movement of the buffer and its pistons.

6. In a vehicle having a fender and a buffer, movements of the latter controlling the releasing of the fender, a movable radiator guard, and mechanism between said guard and the buffer and fender whereby operations of the buffer and fender will cause simultaneous operations of said guard.

In testimony whereof, I affix my signature.
CARL H. TRIESCHMANN.