

E. E. HOTT.
FENDER CONSTRUCTION FOR CARS.
APPLICATION FILED JULY 17, 1911.

1,057,429.

Patented Apr. 1, 1913.

3 SHEETS—SHEET 2.

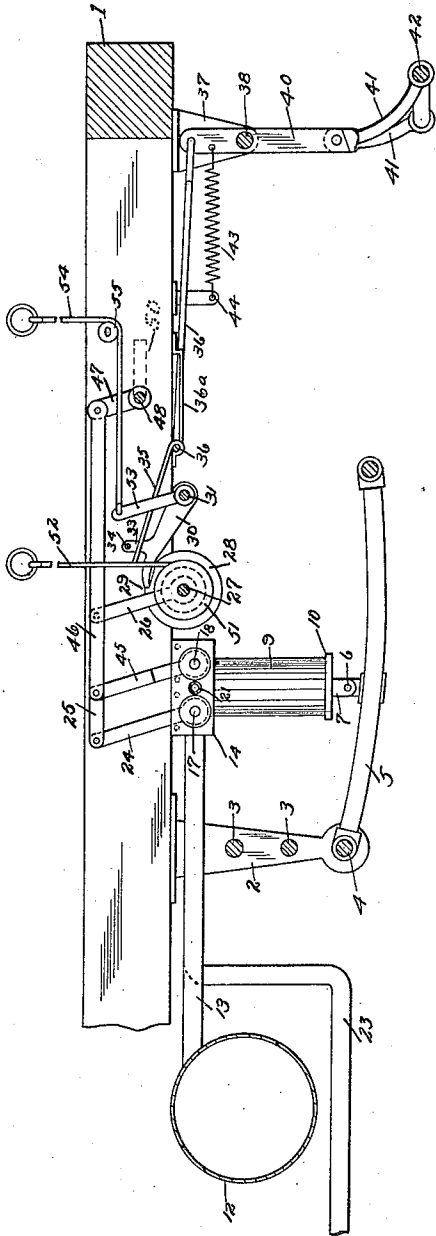


Fig. 1.

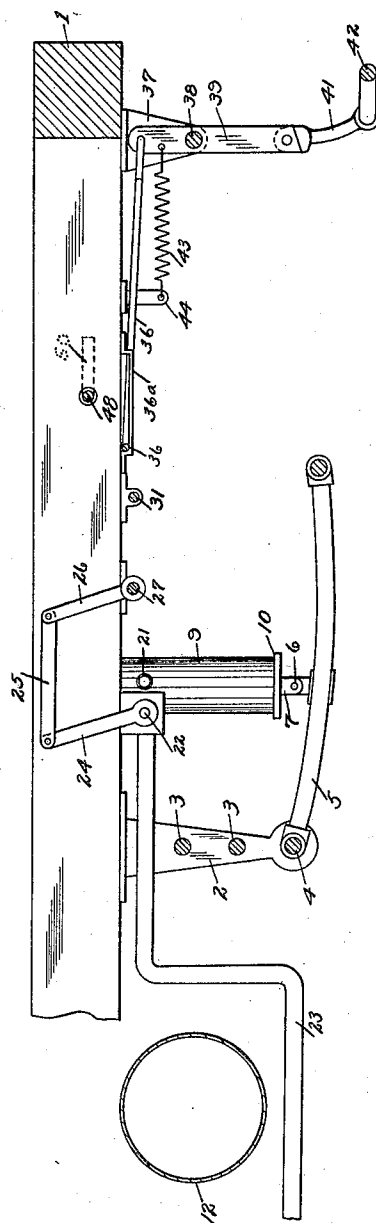


Fig. 2.

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334

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Witnesses

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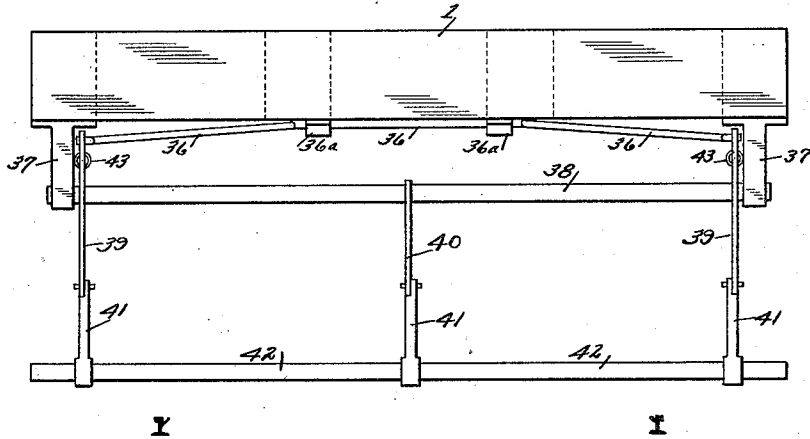


Fig. 4.

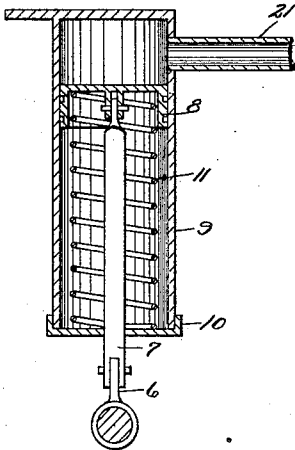


Fig. 5.

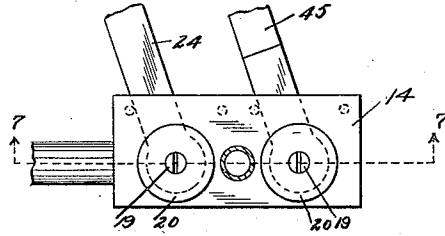


Fig. 6.

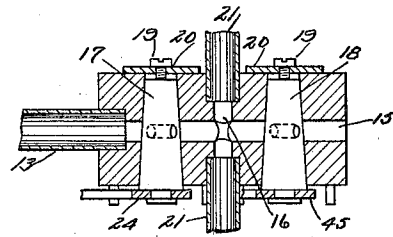


Fig. 7.

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FENDER CONSTRUCTION FOR CARS.

1,057,429.

Specification of Letters Patent.

Patented Apr. 1, 1913.

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To all whom it may concern:

Be it known that I, EDWARD E. HOTT, citizen of the United States, residing at Chillicothe, in the county of Ross and State of Ohio, have invented certain new and useful Improvements in Fender Construction for Cars, of which the following is a specification.

My invention relates to an improved fender construction for cars and is particularly designed to provide a fender which is automatically tripped upon the entrance of an obstacle beneath the forward end of the car.

It consists essentially in the provision of a fender normally held in an elevated position, by means of a resilient mechanical device, such as a spring motor of some kind, the effect of which is adapted to be overcome by the application of the air under pressure for the purpose of positively and rapidly moving the fender into lowered and effective position. There is further provided a trigger device for controlling the application of such air under pressure and rendering it effective with the passage of an obstacle beneath the car.

More explicitly, my invention resides in the provision of a fender preferably pivoted and maintained in normally elevated position by spring controlled pistons, which pistons are adapted to be subjected to the force of air under pressure released by the tripping of a trigger guard disposed beneath the forward end of the car. It will be understood that a person recumbent upon the track upon which the car is traveling will, by contact with the trigger guard, release mechanism serving to admit the air to a point of effectiveness upon the piston.

In the application of my automatic fender to a car and particularly to a car equipped with air brakes, I desirably provide such a structure that the pneumatic and positive actuation of the fender, simultaneously serves to set the air brakes and, furthermore, such operation may be effected in conjunction with either direct or automatic air.

In the effectuation of the essential results of my invention, I desirably provide a means for segregating the actually effective air in the air pressure system to effect the positive operation of the fender and then exhaust such segregated volume of air to permit the fender to return to normal position under the impetus of the resilient means

normally holding said fender in elevated position.

The preferred embodiment of my invention is shown in the accompanying drawings, in which similar characters of reference designate corresponding parts and in which:

Figure 1 is a top plan view of a car body with my invention applied thereto, Fig. 2 is a longitudinal section taken on line 2—2 of Fig. 1 looking in the direction of the arrow, Fig. 3 is a longitudinal section taken on line 3—3 of Fig. 1, looking in the direction of the arrow, Fig. 4 is a front elevation, showing the trigger guard in attachment to the car body, Fig. 5 is a detail view in section of one of the pistons and cylinders used in my device, Fig. 6 is a detail view of the valves which control the application of air under pressure to the cylinders, and, Fig. 7 is a section taken on line 7—7 of Fig. 6.

Referring to the drawings by numeral, the car body is designated 1 and is shown as being provided with depending stanchions 2 carrying cross pieces 3 desirably arranged in parallel relation. These stanchions 2 are braced in any preferred manner and are formed at their lower ends to provide bearings 4 for the pivotal support of a cradle fender 5. The external rods of this fender 5, are preferably pivoted as at 6 to piston rods 7 carrying piston heads 8 pivotally mounted thereon and operating in cylinders 9 having caps 10. Embracing the piston rods 7 and interposed between the piston heads 8 and caps 10 are provided integral springs 11, which normally serve by their expansive tendency to maintain the piston heads at the upper ends of the cylinders and to thereby hold the fender 5 in normally elevated position. Air under pressure is preferably stored in the tank as at 12 and is conducted therefrom by a pipe 13 to a multiple valve casing 14, shown in Figs. 6 and 7. This valve casing is desirably provided with a longitudinal passage 15 and an intersecting transverse passage 16, with a plug valve 17 controlling the passage of air from said pipe 13 through said passage 15 to the transverse passage 16 and with a plug valve 18 controlling the passage of air from said transverse passage 16 and from the pipe 13 when the plug valve 17 is in open position. It will be noted that these plug valves are of conical form and they are so desired in

order that they may be adjusted to take up wear and looseness by means of adjusting screws 19 cooperating with washers 20. The transverse passage 16 has a continuation at either end in the form of pipes 21, which lead into the upper ends of cylinders 9 above the pistons 8.

The plug valve 17 is desirably operated under normal circumstances in conjunction and simultaneously with a plug valve 22 which controls the passage of air through the pipe 23 and by so doing, sets or releases the brakes. The control of these plug valves 17 and 22 is effected by the provision of cranks 24 pivoted at their upper extremities to thrust rods 25 likewise pivotally connected to arms 26 rigidly mounted upon a shaft 27. This shaft 27 is desirably controlled by a torsion spring 27^a so applied as to normally tend to open the valves 17 and 22 by means of the connections 24, 25 and 26. Preferably mounted between such connections on this shaft and rigidly connected thereto, is a disk 28 notched as at 29 for coaction with a pawl 30. This pawl 30 is carried by a pivot shaft 31 under control of a second torsion spring 32 normally tending to move said pawl into cooperative relation with the notched disk 28. When this pawl 30 is in coactive relation with the notch 29 of the disk 28, the plug valves 17 and 22 are in closed position. The pawl 30 is provided with an upwardly extending finger 33 having a cross pin 34 whereby such finger forms a coactive loose connection with a slotted lifting lever 35 loosely mounted upon a yoke 36 having an elongated bearing 36^a. This yoke 36 is controlled by the automatic operation of the trigger guard 40 which is disposed beneath the body at its forward end and is comprised of journal bearings 37 carrying a shaft 38 which forms an intermediate pivotal support for side members 39. These side members 39 coact with a central member 40 and serve to pivotally support the depending arms 41 carrying a cross bar 42. Particular attention to Figs. 2, 3 and 4 will disclose that the pivotal connection of the members 41 with the side pieces 39 and 40 is such as to permit a forward and upward yielding action with relation to the side and central members, but will not permit a rearward movement independently thereof. The upper ends of the side members are pivotally connected to the yoke 36. The trigger guard is normally held in substantially vertical position by tension springs 43 connected to depending pins 44.

In operation of the structure thus far described, an obstacle in the path of the traveling car, will strike the trigger guard and swing it inwardly upon its pivot bearings 37. This will serve to draw the yoke 36 forwardly in its bearing 36^a and through the medium of the lever 35 will lift the pawl 30

and thereby release the disk 28. Such release of the disk 28 permits the rotation of the shaft 27 and through the medium of the connections 24, 25 and 26 opens the plug valves 17 and 22 which sets the brakes and permits the passage of air under pressure from pipe 13 into and through pipes 21 to the upper end of the cylinders 9. The immediate effect upon the piston heads 8 is to force the pistons downwardly and positively move the fender into lowered position. Thus it will be seen that the impact of any foreign obstacle of sufficient size and weight upon the trigger guard, will automatically set the brakes and positively lower the fender.

The plug valve 18 controls the exhaust of the air under pressure from the system. This plug valve is controlled by a crank 45 connected to a thrust rod 46, in turn connected to a crank 47 upon the shaft 48 normally held in a position to maintain the valve closed by a torsion spring 49 and subject to control by an extension 50 suitably connected to any preferred type of operating device. It will be seen that operation of this extension 50 will move the plug valve 18 to open position and permit the air to exhaust from the system providing the plug valve 17 is open. The shaft 27 may be moved back to normal position after operation of the turning plugs which it controls by means of a grooved disk 51 to which is connected a cord or chain 52, an upward pull on such cord serving to rotate the shaft 27 against the stress of its spring until the pawl 30 drops into the notch 29 under the stress of the spring on the shaft 31.

Considering that the fender has been positively forced into lowered position by the air under pressure overcoming the springs 11, if it is desired to return the fender to normal position, an upward pull is exerted upon the cord or chain 52, which serves to return the plug valves 17 and 22 to normal position. Thereupon, the extension 50 is operated to open the valve 18. The air under pressure is then exhausted from the cylinders 9, pipes 21 and passage 15 to the atmosphere. Thus it will be seen that the effective volume of air is segregated from the system and is then exhausted, being partially assisted by the springs 11. Such exhaust necessarily permits the fender to return to normal position under the expansive force of the said springs 11.

It may become desirable to manually control the lowering operation of the fender and I have made this possible by the provision of a lever 53 upon the shaft 31 and connected at its extremity with a cord or chain 54 passing over a pulley 55. If desired to manually render the compressed air effective, it is only necessary to exert an upward pull upon the cord or chain 54, which serves to release the pawl 30 from the notch

29 of the disk 28, permitting the opening of the valves to set the brakes and positively move the fender to lowered position.

It may be noted that the trigger guard 5 referred to previously is of peculiar advantage in rendering such a device as this practical and operative. An example of a condition under which this trigger guard is especially efficacious is in its application to 10 a single truck car. A single truck car when heavily loaded on or near the rear end, will naturally and unquestionably have a tendency to move into closer relation to the street at this end. Because of this, it is necessary 15 to provide a trigger guard which will not catch upon any obstacle on the street in the passage of the car and this freedom of movement is well taken care of by my trigger guard. The trigger guard in the rear will, 20 of course, have a backward and upward movement and practically eliminates all danger of catching and breaking of parts. The front end trigger guard will also be capable of an upward movement in contact 25 with all normal obstacles and furthermore is particularly advantageous in the use of my device upon a car when the ground is covered with snow. It will be apparent that a heavy depth of snow may, under certain 30 conditions, offer sufficient resistance to operate the releasing means for my fender. It is desirable to obviate this accidental operation of the fender and in snowy weather where there is a possibility of this, the trigger guard may be swung upwardly out of 35 danger and yet the operating means will, in no sense, have its effectiveness decreased.

What I claim, is:

1. A fender structure comprising, in combination with a car body, an air pressure 40 system, a fender, pistons connected to said fender, cylinders within which said pistons work, resilient means for maintaining said

pistons in position to hold said fender elevated and a valve controlling the admission 45 of air to said cylinders to overcome the effect of said means and lower said fender, pawl and ratchet mechanism for normally holding said valve closed, and a trigger guard for operating said pawl and ratchet 50 mechanism to release the said valve.

2. A fender structure comprising, in combination with a car body, an air pressure system, a fender, pistons connected to said fender, cylinders within which said pistons 55 work, resilient means for maintaining said pistons in position to hold said fender elevated, a valve controlling the admission of air to said cylinders to overcome the effect of said means and lower said fender, pawl 60 and ratchet mechanism for normally holding said valve closed, and a means for automatically releasing said pawl and ratchet mechanism to release the said valve.

3. A fender structure comprising, in combination with a car body, an air pressure 65 system, a fender, pistons connected to said fender, cylinders within which said pistons work, resilient means for maintaining said pistons in position to hold said fender elevated, a valve controlling the admission 70 of air to said cylinders to overcome the effect of said means and lower said fender, pawl and ratchet mechanism for normally holding said valve closed, a means 75 for automatically releasing said pawl and ratchet mechanism to release the said valve, means for closing said valve to segregate the air in said cylinders, and means for exhausting the segregated air from said cylinders. 80

In testimony whereof I affix my signature in presence of two witnesses.

EDWARD E. HOTT.

Witnesses:

EDWIN P. CORBETT,
INGLE A. MORRIS.