

1,012,637.

Fig. 1.

WITNESSES:

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AUTOMATIC FENDER.
APPLICATION FILED MAR. 2, 1910.

1,012,637.

Patented Dec. 26, 1911.

3 SHEETS-SHEET 2.

Fig. 2.

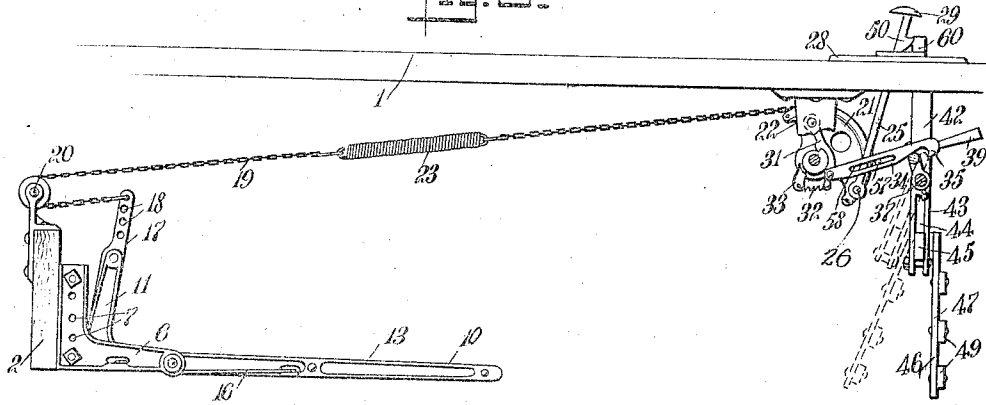


Fig. 3.

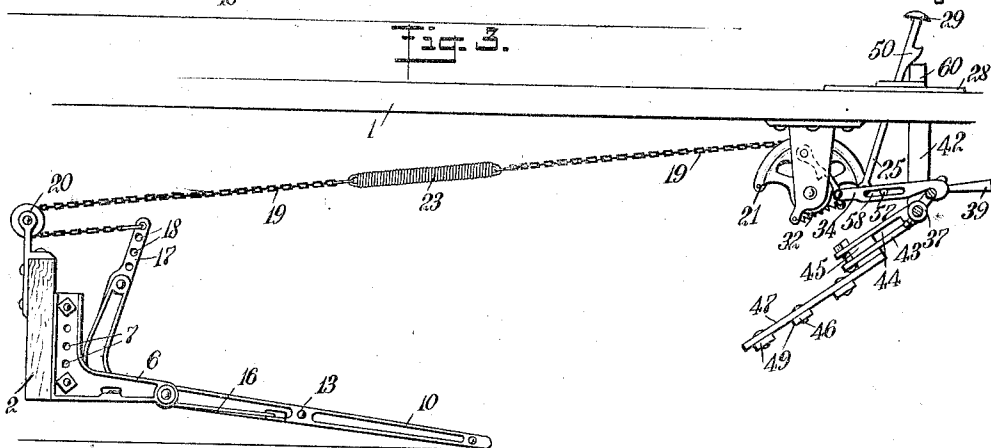


Fig. 4.

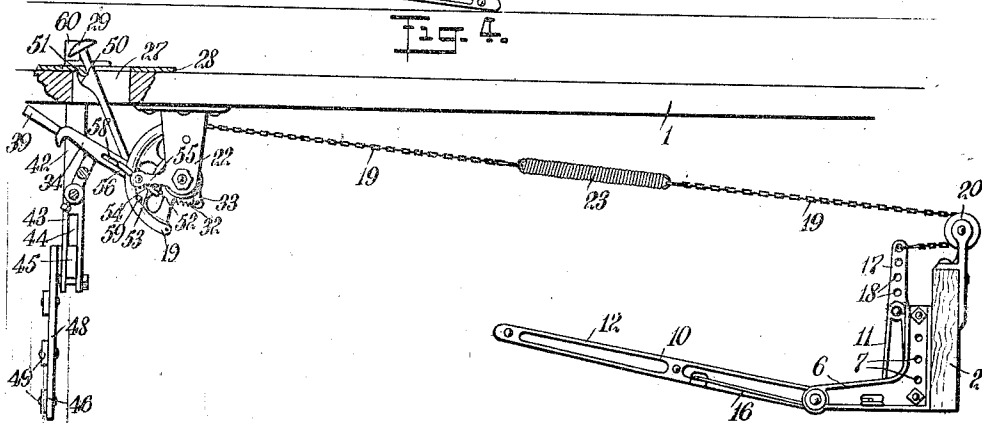
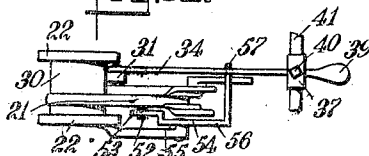


Fig. 12.



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3 SHEETS—SHEET 3.

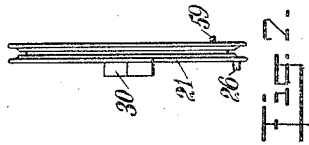


Fig. 2.

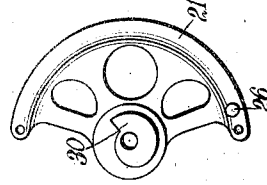


Fig. 3.

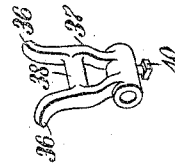
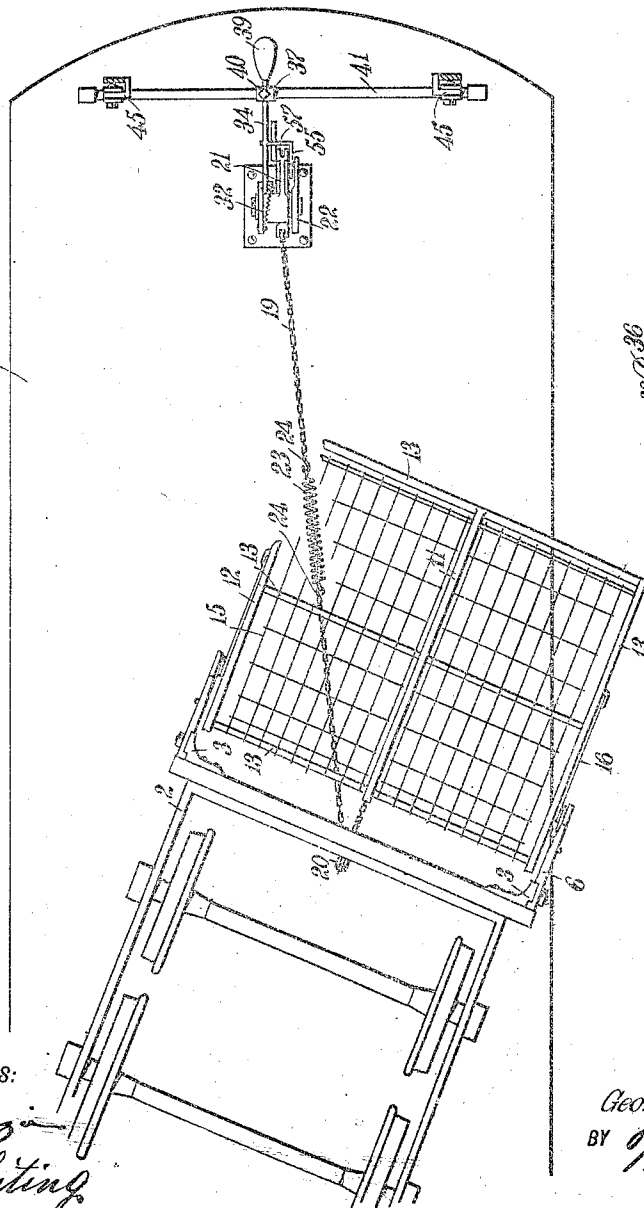


Fig. 5.

WITNESSES:

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UNITED STATES PATENT OFFICE.

GEORGE HIPWOOD, OF NEW YORK, N. Y.

AUTOMATIC FENDER.

1,012,637.

Specification of Letters Patent.

Patented Dec. 26, 1911.

Application filed March 2, 1910. Serial No. 546,805.

To all whom it may concern:

Be it known that I, GEORGE HIPWOOD, a citizen of the United States, and a resident of the city of New York, borough of Manhattan, in the county and State of New York, have invented a new and Improved Automatic Fender, of which the following is a full, clear, and exact description.

This invention relates to a fender to be used on cars or any other suitable vehicles, and is of that type in which a drop fender is adapted to be lowered by the engagement of an obstruction with a trip gate.

An object of this invention is to provide a device which will be extremely simple in construction, inexpensive to manufacture, strong, durable, and positive and quick in its operation.

Another object of this invention is to provide a drop fender with a trip gate for releasing the same, said trip gate having a limited vertical movement whereby unevenness in the ground or in the rocking motion of the car may be allowed for.

A further object of this invention is to provide a drop fender with means for adjusting the height thereof above the ground.

A still further and important object of this invention is to provide a drop fender with means for dropping the same, with a connection between the two adapted to adjust itself to the relative motion of the truck and body of the car, as in swinging around corners.

A still further and important object of this invention is to provide a drop fender with means for dropping the same, and with further means for rendering the dropping means inoperative, for the purpose of passing over obstructions, bridges, or the like.

These and further objects, together with the construction and combination of parts, will be more fully described hereinafter and particularly set forth in the claims.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views, and in which—

Figure 1 is a perspective view, showing my fender attached to a car, and in its normal, raised position, set ready to be tripped; Fig. 2 is a detail view in side elevation,

showing the fender in its normal position, ready to be tripped by the impact of an obstacle against the trip gate, the dotted position showing the amount of limited swing allowed in this particular adjustment of the device; Fig. 3 is a view similar to Fig. 1, showing the fender in its dropped position, with the gate in the act of tripping the latch mechanism; Fig. 4 is a view in elevation, partly in section, of the parts illustrated in Figs. 2 and 3, taken from the opposite side, and showing the relative position of the parts in their abnormal position, in which the gate is free to swing without tripping the fender, and in which the gate is abnormally raised and positively locked in its raised position; Fig. 5 is a bottom plan view, showing the relative position of the drop fender on the truck, and the mechanism on the car body in rounding a curve, and illustrating the action of the means for permitting the relative movement of the parts without disarranging the same; Fig. 6 is a detail view in elevation of the sector-wheel; Fig. 7 is a view of the same part illustrated in Fig. 6, taken at right angles thereto; Fig. 8 is a perspective view of the tripper connected to the tripping gate; Fig. 9 is a detail perspective view of the adjustable supporting bracket for the drop fender; Fig. 10 is a perspective view of the stationary bracket to which the adjustable bracket illustrated in Fig. 9 is attached; Fig. 11 is a plan view, partly in section, of the mechanism for preventing the plunger from being accidentally drawn down to its abnormal position; and Fig. 12 is a fragmentary plan view of the sector and mechanism connected thereto for releasing the trip, looking from the under side.

Referring more particularly to the separate parts of the device, 1 indicates the body of a car or other vehicle, which is supported in any suitable manner, by means of one or more trucks 2. Secured to the outer end of the truck 2, there is provided a pair of stationary brackets 3, clearly illustrated in Fig. 10. The faces of the outwardly-extending flanges of these brackets 3 are provided with corrugations 4, which are adapted to engage similar corrugations 5 on adjustable brackets 6. The adjustable brackets 6 are provided with a plurality of apertures 7, through which are

adapted to be inserted bolts 8, the latter being also adapted to extend through slots 9 in the brackets 3, whereby the brackets 6 may be adjustably connected at any height to the brackets 3.

Pivottally secured to the outwardly-extending arms of the brackets 6, there is provided a fender 10, which may be of any suitable structure, but preferably consists of a central angular member 11 and side angular members 12, connected by transverse bars 13 arranged at suitable spaced intervals, thus forming a complete, strong and durable frame for a network 14, composed preferably of angularly-arranged wires 15, which may be secured together in any well known manner, but preferably by welding.

The fender 10 is normally urged downwardly by means of springs 16, secured at their outer ends to the sides of the fender, and coiled intermediate their ends around the pivot points of the fender, and also secured at their inner ends to the outwardly-extending arms of the brackets 6.

In order to hold the fender up in its non-picking-up position, the member 11 is extended a certain distance to form an arm 17, which is provided with a plurality of openings 18, whereby a flexible connection 19, which may be of any suitable character, such as a chain, may be adjustably attached. The flexible connection 19 passes over a suitable guide pulley 20, which may be pivottally connected in any well known manner to the truck 2. The flexible connection 19 extends forwardly, where it is attached in any suitable manner to a grooved sector wheel 21, which is pivottally supported in any well known manner, by means of brackets 22, on the under side of the car body. An important feature of the flexible connection 19 is that it is provided intermediate its ends with a resilient or yielding member 23, which is in the form of a coil spring, and which is adapted to take up the relative motion of the fender 10 on the truck 2 and the sector wheel 21 and the mechanism connected thereto on the body 1 of the car. This is especially necessary in rounding curves, when the body tends to travel in a straight line while the trucks closely follow the curvature of the tracks. It is to be noted that the spring 23 is connected by means of S-hooks 24 to the two portions of the flexible connection 19, so that the length of said flexible connection may be adjusted as desired.

In order to raise the fender 10 into its normal position, as indicated in Figs. 1 and 2, there is provided a plunger 25, which is pivottally connected at its lower end to a lug 26 on the sector 21, and extends upwardly through a slot 27 in the body of the car and in a reinforcing plate 28, where it terminates above the floor of the car in a tread-head 29. By this arrangement, if the motorman

places his weight on the tread-head 29, he can depress the plunger 25 from the position indicated in Fig. 3 to the position indicated in Fig. 2, thereby raising the fender from its dropped position to its normal, raised position. In order to lock the fender in its normally raised position, there is provided a cam-shaped lug 30, which is secured to the sector 21 in any well known manner, preferably by being cast integral therewith, and which is adapted to engage a latch 31, which is pivottally secured in any well known manner on one of the brackets 22. The latch 31 has secured at its lower end, a spring 32, which is connected at its other end to a lug 33 on one of the brackets 22, whereby the latch 31 is normally urged into intimate engagement with the locking lug 30. In order to release the latch 31 and thereby permit the fender 10 to fall into its picking-up position, there is provided a trip 34, which is pivottally secured in any well known manner to the latch 31 and extends outwardly, where it is provided with a hook 35, which is adapted to fall between converging guiding flanges 36 on a tripper 37, and engage a transverse bar 38. The trip 34 is provided with a weight 39 at its outer end, whereby it is normally held in engagement with the tripper 37. The tripper 37 is adjustably secured in any well known manner, as by means of a set-screw 40, to a transverse bar 41, which is pivottally secured in any well known manner to the body of the car, as by means of brackets 42.

Rigidly secured to the transverse bar 41 so as to rotate therewith, there is provided a pair of hangers 43, arranged at each end thereof. These hangers are provided with vertical slots 44, which are adapted to be engaged by angular followers 45 on a gate 46. This permits a certain vertical movement of the gate 46 relative to its supporting hangers 43, so that it will pass over certain low obstructions, and will yield to a limited amount of jabbing into the ground, without actuating the releasing mechanism for the fender. The fender 46 preferably consists of vertical members 47 and 48, on which are provided the angular followers 45, and which are connected by one or more transverse slats 49 of any suitable material.

We now come to an important feature of this invention, which relates to the means for throwing the tripping gate 46 out of operation, so that the car can be run over a bridge or around sharp curves, where the gate 46 may be swung its full distance without operating the fender to drop the same. For this purpose, it is merely necessary to depress the plunger 25 an additional extent from the position indicated in Fig. 2 to the position indicated in Fig. 4, where the front end of the fender 10 is raised somewhat, and a cam lock 50 on the plunger 25 engages a

notched boss 51 on the plate 28, adjacent the front end of the slot 27, to retain the fender in its raised position. It is to be noted that the parts are so arranged that when the plunger 25 is depressed into its abnormal position, the angle at which the plunger extends is such as to bring the thrust due to the weight of the fender almost directly in alinement with the plunger 25, and a lock 50 thereon, thereby positively preventing the plunger 25 from being disengaged by the jarring of the car. However, the depression of the plunger 25 to its abnormal position does more than merely raise the fender 10. It disconnects the trip 34 from the tripper 37. For this purpose, there is provided on the sector wheel 21 a lug or pin 52, which is adapted to engage during its abnormal depression one arm 53 of a bell crank lever 54, which is pivotally connected in any well known manner to an extension 55 on the bracket 22. The other arm 56 of the bell crank lever 54 is provided with a pin 57 which engages with a slot 58 on the trip 34. By this means, when the lug 52 moves downwardly, due to the extra depression of the plunger 25, it comes into engagement with the arm 53 of the bell crank lever 54, raising the opposite end which, through its slot-and-pin connection, raises the trip 34 out of engagement with the tripper 37. When this has taken place, the gate 46 can swing to and fro without disturbing the fender 10 or its releasing mechanism. The lug 52 is small enough and does not project beyond the outer surface of the side of the sector wheel 21, and therefore can readily pass between the brackets 22. However, in order to prevent the sector wheel 21 from going back too far under the weight of the fender 10, and thereby carrying the pivotal point of the plunger 25 beyond the dead point, there is provided a lug 59, which projects a sufficient distance to engage with the side of the bracket 22.

While a motorman or driver who has operated this device a few times will readily gauge the amount necessary to depress the plunger 25 to raise the fender from its dropped position to its normal position, it may be possible that a green motorman would depress the fender abnormally and raise it to its abnormal position indicated in Fig. 4. To avoid this, I provide a stop 60 which is pivotally connected in any well known manner to the platform of the car adjacent the slot 27. The stop 60 is adapted to project at one end over the slot 27 beneath the head 29, where it is of sufficient thickness to prevent the head moving beyond the distance necessary to raise the fender 10 to its normal position. The stop 60 can be readily thrown from the full-line position illustrated in Fig. 11 to the dotted-line position, where it is drawn away from the slot 27, so

that when necessary, the plunger 25 can be depressed to its abnormal position. In order to lock the stop 60 in either of its full-line or dotted-line positions indicated in Fig. 11, there is provided an elliptical spring 61, which is secured in a casing 62 connected to the car body in any well known manner, and which is adapted to engage in notches 63 and 64 arranged on either side of an enlargement 65.

The operation of the device will be readily understood when taken in connection with the above description. In the normal operation of the car or other vehicle, the fender at the front end is set in its normal, raised position, as indicated in Fig. 2 with the trip 34 engaging the tripper 37, so that the gate 46 will be in a position ready to release the fender 10. The fender at the rear of the car or vehicle however, is preferably set in its abnormal, raised position, as indicated in Fig. 4, so that the gate 46 will be free to swing without releasing the fender. It is to be noted in this position that the angular relation of the plunger 25 with the sector wheel 21 and with the notched boss 51 on the plate 28, is such that an almost direct thrust is exerted along the direction of the plunger 25, thereby positively holding the locking lug 50 in engagement with the boss 51 and preventing any accidental disengagement thereof by the jarring of the car. During the running of the car, the gate on the forward fender is free to slide up and down to a limited extent, so that it will readily ride over a small obstruction, such as a small boulder, and will also give in a vertical direction, when the rocking or dipping motion of the car causes the gate to strike the ground. The gate 46 also has a limited free swinging motion, allowing for small obstacles and bumps, which may be adjusted by adjusting the position of the tripper 37 on the transverse bar 41. When the gate 46 strikes against a large obstacle, such as the body of a person on the ground, it is swung positively rearwardly into the position indicated in Fig. 3, thereby drawing the trip 34 forwardly, releasing the latch 31 from engagement with the locking lug 30, thereby permitting the fender 10 to be swung down positively by means of the springs 16, where the fender 10 will be in a position to scoop up the body and prevent it from going under the wheels. In some cases where there is excessive dipping or rocking of the car, due to the unevenness in the roads and also in going around sharp curves or traveling over bridges, it is necessary to throw the tripping mechanism out of operation. This is done by merely depressing the plunger 25 to its abnormal position, illustrated in Fig. 4, until the unevenness in the ground, or other cause, has been removed, when the motorman can, by de-

pressing the plunger 25 to a slightly greater extent, release the lock 50 from the locking boss 51, thereby returning it to its normal set position, illustrated in Fig. 2. The

5 yielding connection between the fender 10 and the tripping mechanism provided by the spring 23 permits the relative motion of the truck and car body and the fender and tripping mechanism connected respectively thereto, as illustrated in Fig. 5, without causing any derangement of the parts or the tripping of the fender.

While I have shown one embodiment of my invention, I do not wish to be limited to the specific details thereof, but desire to be protected in various changes, modifications and alterations which I may make within the scope of the appended claims.

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

1. In a device of the class described, the combination with a drop fender, of locking means for holding said fender in its raised position, a gate for tripping said locking means, so as to drop said fender, and additional locking means adapted to lock said fender in its raised position, independent of the operation of said gate.

2. In a device of the class described, the combination with a car, of a drop fender, a tripping mechanism for said fender, and means extending within the car for simultaneously raising said fender abnormally and rendering said tripping mechanism inoperative.

3. In a device of the class described, the combination with a drop fender, of a trip for said drop fender, a gate adapted to operate said trip, and means for moving said trip out of operative connection with said gate while said fender is still in its raised position.

4. In a device of the class described, the combination with a drop fender, of a trip for said drop fender, a gate for operating said trip, means for removing said trip out of coöperation with said gate while said fender is still in its raised position, and means for locking said trip out of coöperation with said gate.

5. In a device of the class described, the combination with a drop fender, of an arcuate member, a flexible connection connecting said member with said fender, means for operating said member, means for locking said member, a trip for said locking means, a gate for operating said trip, and means operated by said member for removing said trip from coöperation with said gate.

6. In a device of the class described, the combination with a drop fender, of an arcuate member, a connection between said member and said fender, a latch for securing said member in position, a trip for releasing said

latch, a lever, having a pin-and-slot connection with said trip, and means on said member for operating said lever.

7. In a device of the class described, the combination with a drop fender, of an arcuate member connected to said drop fender and adapted to operate the same, a latch for locking said member, a trip for releasing said latch, a lever having a pin-and-slot connection with said trip, a lug on said member adapted to operate said lever, means for operating said member, and a gate for actuating said trip.

8. In a device of the class described, the combination with a drop fender adapted to assume a normal raised position, a dropped position and an abnormal raised position, of a plunger for raising said fender beyond normal raised position, and an adjustable stop for preventing said plunger from raising said fender beyond its normal raised position.

9. In a device of the class described, the combination with a car body, of a truck for said car body, movable relative thereto, a drop fender on said truck, a resilient connection for maintaining said drop fender in its raised position, connected to said car body, whereby a relative movement between said fender and said car body is allowed for and means on said car body for slackening up on said resilient connection, whereby said fender is lowered to its depressed position.

10. The combination with a car body, of a truck for said car body, movable relative thereto, a fender pivotally connected to said car body, means adapted to normally urge said fender toward its depressed position, a resilient connection between said fender and said car body, adapted to maintain said fender in its raised position, whereby a relative movement between said fender and said car body is permitted, and means for slackening up on said resilient connection, whereby said fender is permitted to drop to its depressed position.

11. The combination with a car body, of a truck for supporting said car body, movable relative thereto, a fender pivotally connected to said truck, a flexible resilient connection adapted to maintain said fender in its normal raised position, a member pivotally connected to said car body and secured to said flexible connection, means for locking said member so as to maintain said flexible connection under tension, and means for releasing said locking means.

12. The combination with a car, of a fender pivotally connected to said car and adapted to assume a depressed position, a normal raised position, and an abnormal raised position, means for maintaining said fender in its depressed position, means for locking said fender in its normal raised position, means for locking said fender in its

abnormal raised position and a gate disposed in front of said fender for tripping said fender.

13. The combination with a car, of a fender pivotally connected to said car and adapted to assume a depressed position, a normal raised position, and an abnormal raised position, means for maintaining said fender in its depressed position, means for locking said fender in its normal raised position, means for locking said fender in its abnormal raised position, means for shifting said fender to its various positions and a gate disposed in front of said fender for tripping said fender.

14. The combination with a car body, of a truck for said car body, a fender secured to said truck, a trip gate secured to said car body, locking mechanism for holding said fender in its raised position, secured to said car body and adapted to be operated by said gate but normally disconnected therefrom,

and a yielding connection between said locking mechanism and said fender, adapted to permit the relative movement of said gate and said fender while still maintaining said fender in its normally raised position.

15. In a device of the class described, the combination with a drop fender, of locking means for holding said fender in its raised position, a gate for tripping said locking means, so as to drop said fender, and additional locking means for simultaneously locking said fender in its raised position and operatively disconnecting said first-mentioned locking means from said trip gate.

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

GEORGE HIPWOOD.

Witnesses:

HORATIO WHITING,
PHILIP D. ROLLHAUS.