(No Model.) 3 Sheets—Sheet 1.

# L. J. HUNTER.

## CAR FENDER.

No. 604,395. Patented May 24, 1898.

Fig. 1.

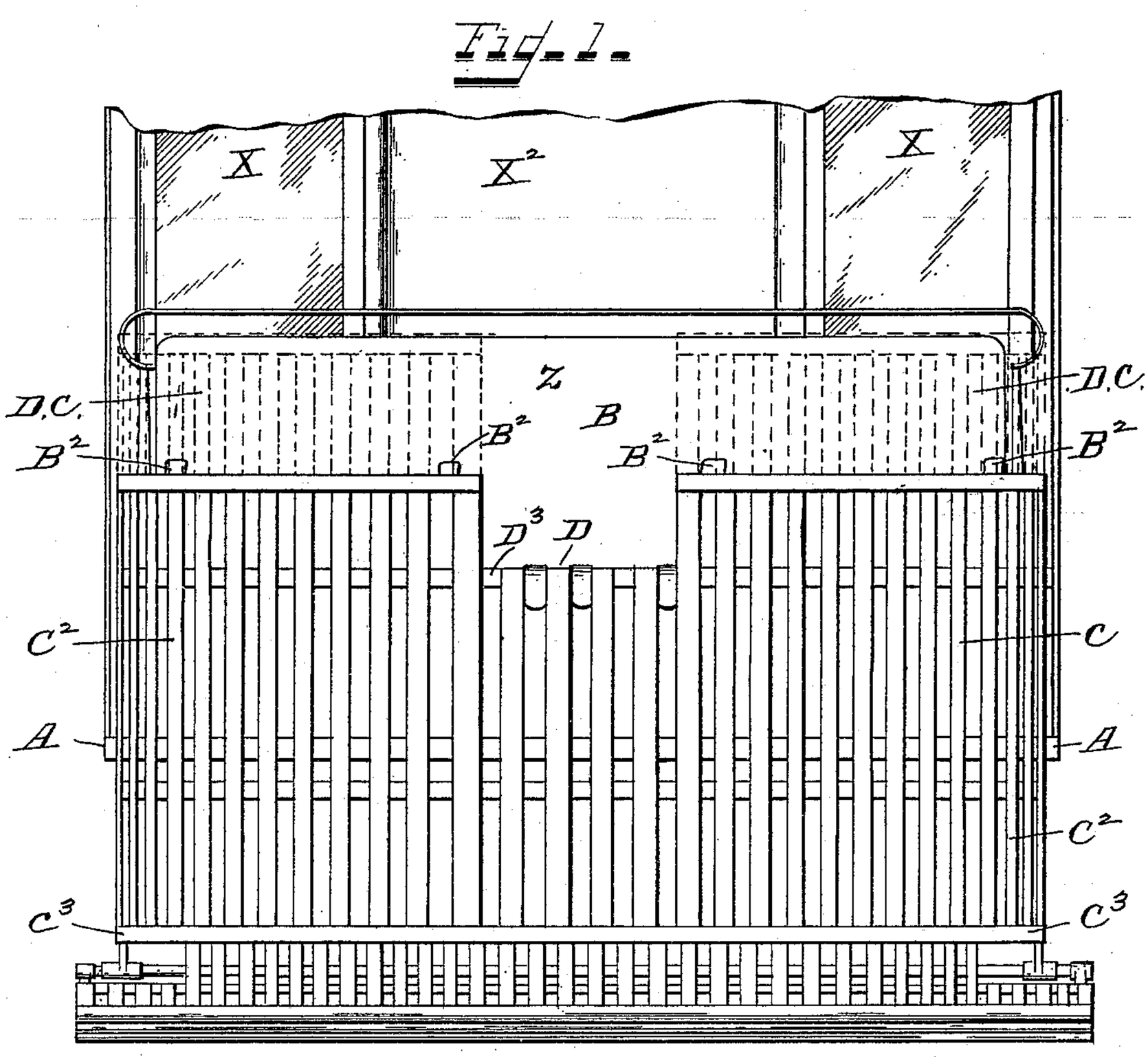



Fig. 5.

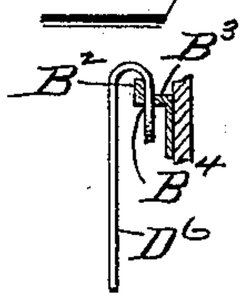



Fig. 6.

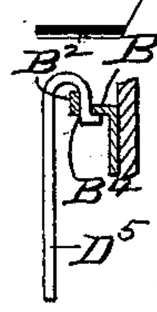



Fig. 11.

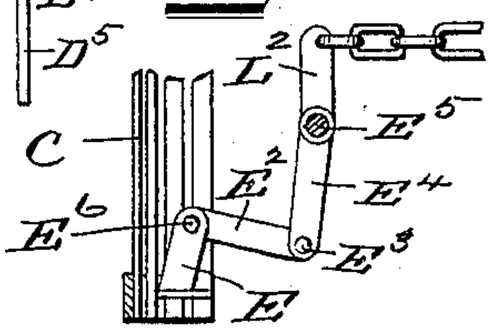
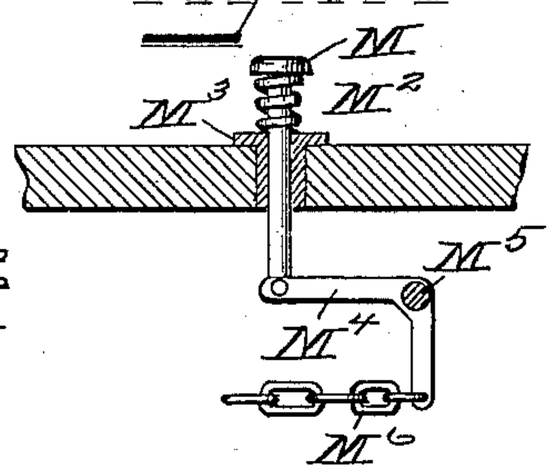



Fig. 10.




Witnesses:

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T. Smith

Inventor.

Lytle J. Hunter

(No Model.) 3 Sheets—Sheet 2.

# L. J. HUNTER.

## CAR FENDER.

No. 604,395. Patented May 24, 1898.

Fig. 2.

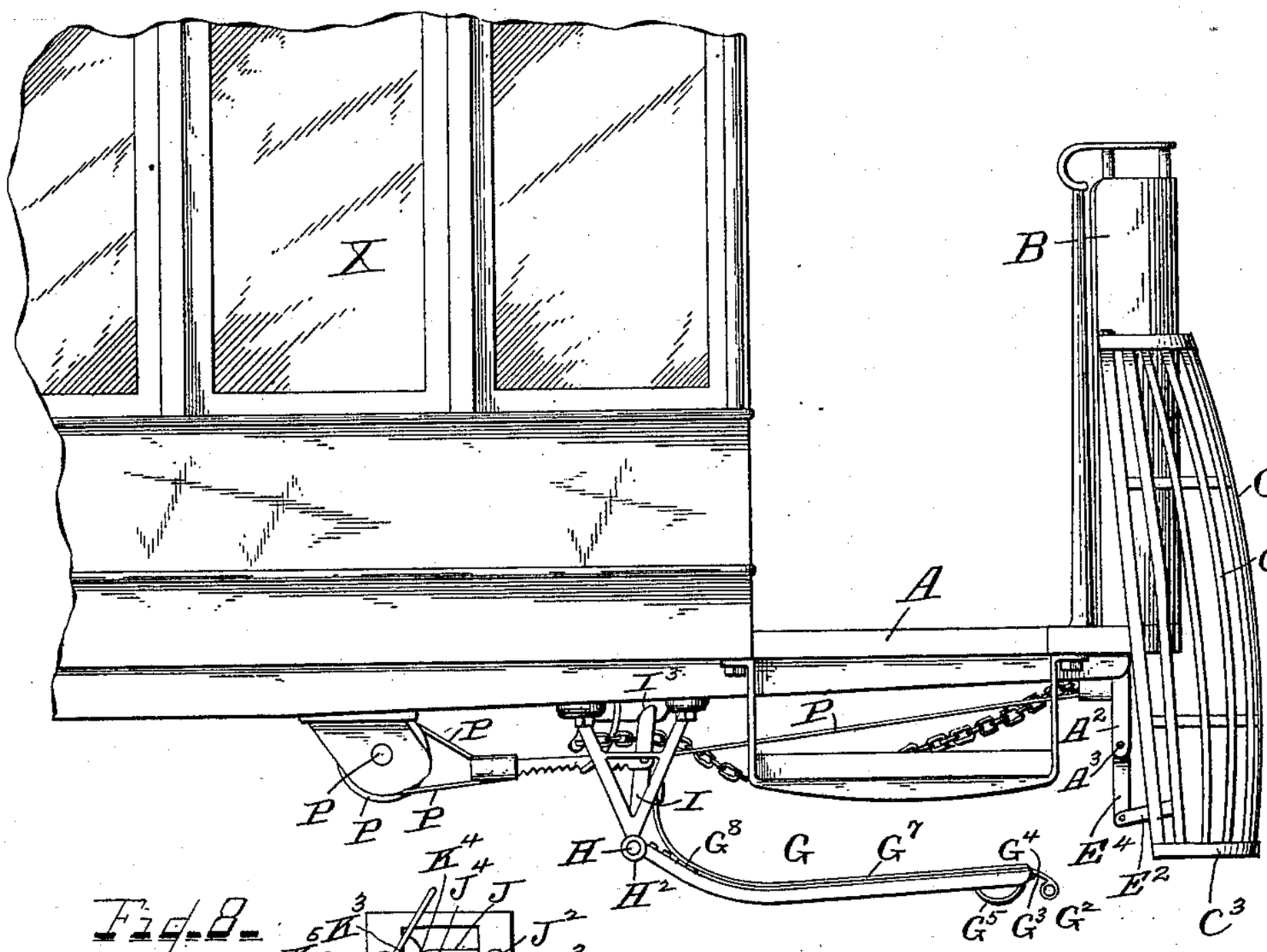



Fig. 8.

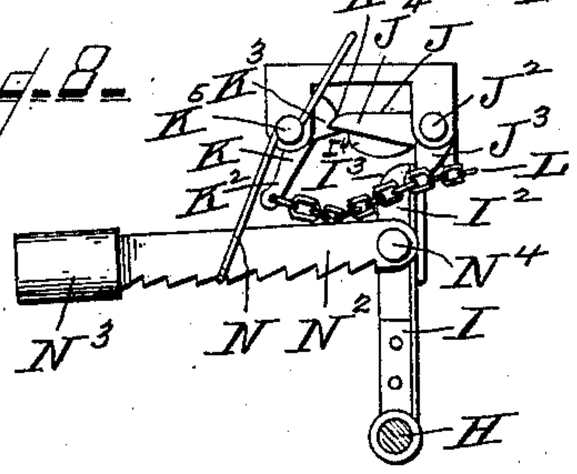



Fig. 9.

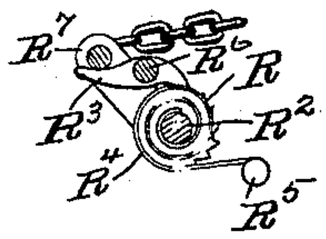
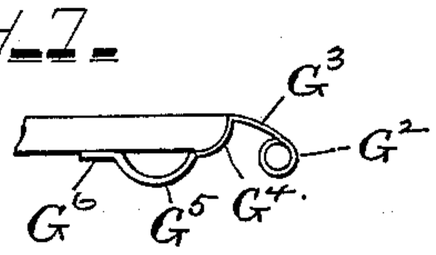



Fig. 7.




Witnesses:
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(No Model.) 3 Sheets—Sheet 3.

# L. J. HUNTER.

## CAR FENDER.

No. 604,395. Patented May 24, 1898.

Fig. 3.

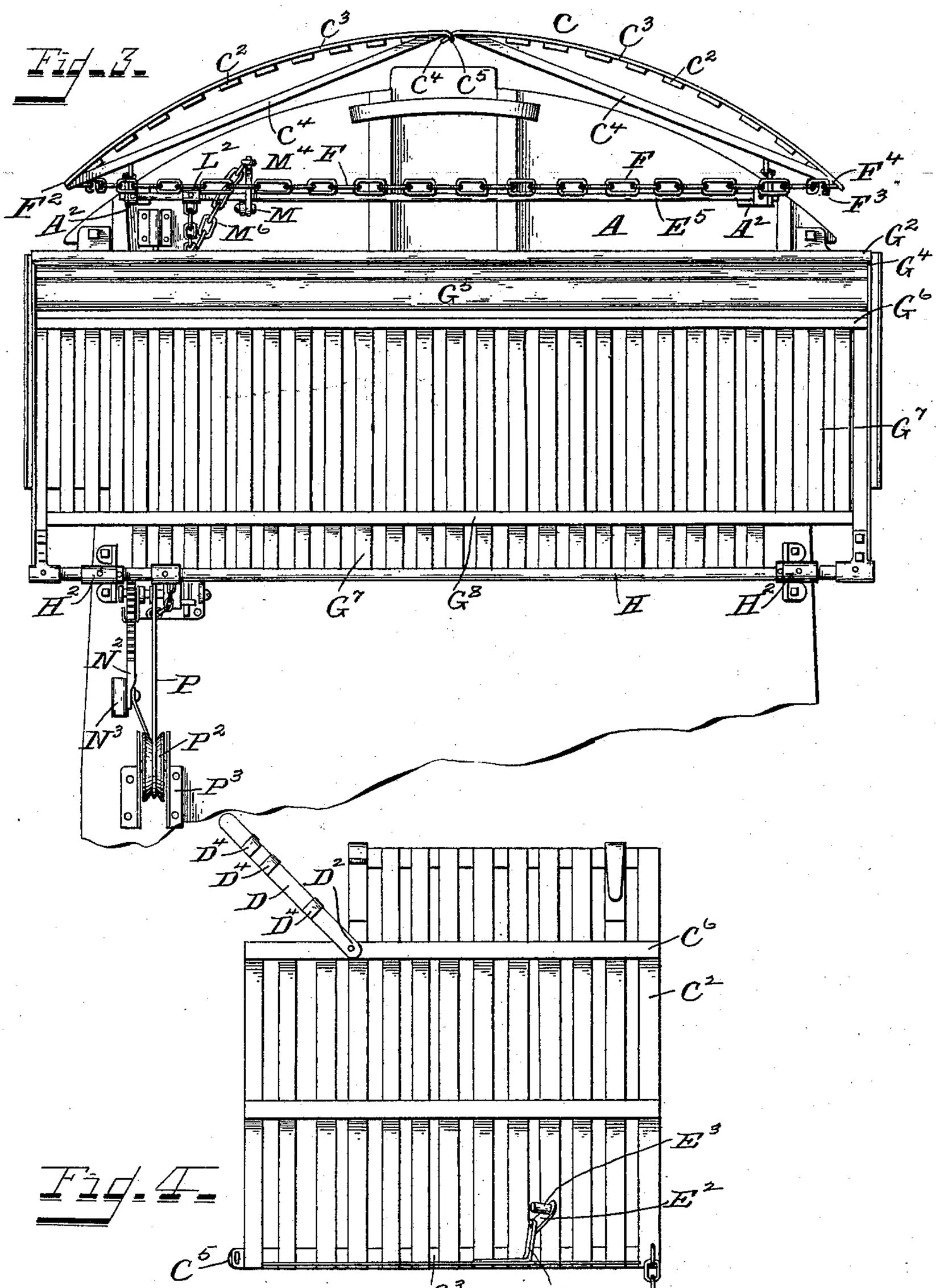


Fig. 4.

Witnesses:
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L. Smith.

Inventor.
Lytle J. Hunter

# UNITED STATES PATENT OFFICE.

LYTLE J. HUNTER, OF COVINGTON, KENTUCKY.

## CAR-FENDER.

SPECIFICATION forming part of Letters Patent No. 604,395, dated May 24, 1898.

Application filed March 19, 1896. Serial No. 584,013. (No model.)

*To all whom it may concern:*

Be it known that I, LYTLE J. HUNTER, a citizen of the United States, and a resident of the city of Covington, in the county of Kenton and State of Kentucky, have invented certain new and useful Improvements in Fenders for Street and other Cars, of which the following is a specification.

The several features of my invention and the various advantages resulting from their use, conjointly or otherwise, will be apparent from the following description and claims.

In the accompanying drawings, making a part of this application and in which similar letters of reference indicate corresponding parts, Figure 1, Sheet 1, is a front elevation of a car and of mechanism applied thereto and embodying my invention. Fig. 2, Sheet 2, is a side elevation of the same, the rear portion of the car being omitted. Fig. 3, Sheet 3, is a bottom view of the front portion of a car, running-gear omitted, and illustrating the application of my invention thereto. Fig. 4, Sheet 3, is a rear elevation of one division of the shield. Figs. 5 and 6, Sheet 1, are edge elevations of hooks used to connect the shield to the dashboard of the car. Fig. 7, Sheet 2, is an edge view of the front portion of the fender. Fig. 8 is a detailed view, enlarged, of the mechanism for dropping the fender and holding it in position. Fig. 9 is an elevation of the mechanism for regulating the degree of promptness and facility with which the shield drops the fender. Fig. 10 is a detail, enlarged, of the mechanism whereby the driver drops the fender. Fig. 11 is a detail, enlarged, of the mechanism whereby the shield, when pressed back, operates to pull the connection L and thereby drop the fender.

A indicates the platform of the car, B the dashboard thereof, and X the car-body, of which $X^2$ is a door.

C indicates my improved shield or bumper. One of the principal objects of this shield is to prevent any part of the car striking any part of the human being or other object in front of the car with which the car would otherwise collide. This shield is so constructed and so operated that it saves the body which it strikes from being injured by it, (the shield,) and therefore preserves life, limb, and health. The shield is so shaped as that unless the object struck is in the exact center of it it will, when meeting the object, operate to throw such object off from the track and to one side thereof. In case the shield fails to throw the object from the track it will, when in conjunction with a fender, as is preferably the case, operate to drop the latter instantly, and the object will be caught up by the fender, thereby making it impossible for the wheels of the car to pass over the object. To this end the shield extends up on the dashboard and low down toward the track and wide out around the front corners of the car, and further constructed and operated as hereinafter described. When desired, it is continued well up on the dashboard, and sometimes is made to cover the entire board, as indicated by the dotted lines D C. It is made of elastic bars or slats $C^2$, suitably connected to one another.

A great advantage of my shield is that it is readily removed from the car and as readily replaced in position in front of the dash. This is an important desideratum when necessity arises to couple the fender end of the car to another car or to have the former propelled by another motor-car, &c., or when necessity arises to get at any of the running-gear or mechanism beneath the platform A of the car. To obtain this ease of removal and readjustment, I have devised some very great improvements, to wit: I construct the shield in sections, preferably in two sections, the shield being vertically divided in the center. Each section has a lower cross-brace $C^3$, and the ends of these adjacent braces interfit, to wit: A tongue $C^4$ on one of these braces enters a slot or eye $C^5$ in the other of the braces. Higher up the braces are united by the latch D, hinged at $D^2$ to one section and provided with several pairs of projections or clamping-pieces, each pair consisting of pieces $D^3$ $D^4$, adapted to receive between them an adjacent portion of the shield. This portion is preferably a cross tie or brace $C^3$, the pieces $D^3$ $D^4$ being received between adjacent vertical bars $C^2$, substantially as shown.

The means devised for securing the upper portion of the shield to the dash are hooks $B^2$ on the dash, (see Figs. 1, 5, and 6,) having a broad table or basal part $B^3$. The latter is perforated at $B^4$.

On the shield are hooks $D^5$ $D^6$, of which those marked $D^5$ are in the shape of a gooseneck, and when these hooks are applied to their adjacent hooks on the dash and the tongue of the hooks $D^5$ $D^6$ inserted into the slits $B^4$ the gooseneck will prevent the shield after being dropped down into place from becoming detached from the dashboard.

The lower ends of the section of the shield are connected to the car by an ingenious device consisting as follows: To the lower portion of each section is connected an arm E, and to this arm is hinged a link-arm $E^2$ at $E^6$, provided with a side pin $E^3$. From the car projects an arm $A^2$, provided with an opening $A^3$, which latter receives the shaft $E^5$ of the arm $E^4$. The preferred and novel means for holding these pins $E^3$ in place and steadying the shield and binding together (so to speak) the sections of the same is a connection F, obviously preferably a chain, connected to one outer lower corner $F^2$ of the shield and adapted by hook $F^3$ to be hooked into the eye $F^4$ of the opposite lower corner of the shield. When thus hooked, the chain is the chord of an arc and slightly bends the elastic shield and holds each pin $E^3$ in place in its adjacent arm $A^2$. It will be observed that the arms $E^2$ while movable vertically are not capable of lateral deflection.

The removal of the shield from the car is but the work of a few seconds, to wit: The chain F is unhooked and the latch lifted. Each section of the shield is lifted from the bottom slightly sidewise away from its companion section and forward and up from the car, care being taken to move it edgewise enough to unlock the pin $E^3$ from arm $A^2$, and as soon as the gooseneck-hook $D^5$ is disengaged from its hook $B^2$ the section is lifted off altogether from the car. These operations are reversed when the sections are replaced.

The mechanism described is very simple, strong, durable, and easily worked. The hook connections at $B^2$ $B^2$ admit of all necessary play in the movements of the shield.

When the car carries a headlight and the latter is affixed to the dashboard, a suitable opening, as at Z, Fig. 1, will ordinarily be provided. To brace the shield below, a brace $C^4$ is present in each cross-section of the shield, the brace forming a chord with the curve of the section.

The fender proper, G, is in general of the shape of a scoop and at its front end is preferably of a novel and advantageous construction. The rear end is connected to a shaft H, journaled in suitable bearings $H^2$ $H^2$, secured to the car. The fender has a front end adapted to lie on the track-rails and to have its front edge close to the rails. The novel construction of the front portion is as follows: Formed out of a single piece of sheet metal is the curved circular bent or curved front piece $G^2$ and the succeeding flat part $G^3$, and the shoulder $G^4$, the succeeding curved portion $G^5$, and the flat portion $G^6$. The portion $G^5$ (when the fender is dropped) slides on the rails or road-bed. The portions $G^6$ and $G^4$ receive the forward ends of the elastic slats $G^7$ of the main body of the fender and are secured to said slats and support them.

A brace $G^8$ is present across the rear portion of the fender to strengthen the same.

I will now describe the tripping mechanism. To the shaft H is fixed a tripping-rod I, extending upward. The forward part $I^2$ of the upper and free end of the rod is flat, while the upper and rear portion $I^3$ of said end is curved. Above this tripping-rod is a bell-crank lever J, pivoted at $J^2$ to the frame. One arm $J^3$ of this lever bears against the flat end $I^2$ of lever I, and the other arm $J^4$ is arranged to engage a recess $K^4$ in the arm $K^3$ of lever K, pivotally fulcrumed at $K^5$ to the frame. The lower end of the arm $K^2$ is connected to a chain L, or like connection, extending therefrom to the free end of an arm $L^2$ on the shaft $E^5$. Thus when the chain L is drawn forward the arm $J^4$ is disengaged from the recess $K^4$. The lever J then yields to the forward pressure of the rod I, (impelled by the weight of the fender,) and the forward end of the fender descends and rests on the rails in position to catch and take up the object on the track in front of the car. It will be observed that the movement of the shield backward—*i. e.*, toward the car—operates through the agency of the parts E, $E^2$, $E^3$, and $L^2$ to pull the chain L forward and drop the fender.

Means for enabling the driver of the car to drop the fender are as follows: A foot-treadle M is present at and above the platform A (see Fig. 10) and is upheld by a spring $M^2$ when not depressed by human agency. The shank of the treadle passes down through the platform and preferably through a sleeve $M^3$ thereof and at its lower end is connected to one end of a bell-crank lever $M^4$, pivotally fulcrumed at $M^5$ to the frame and at its other end connected to a chain $M^6$ or the like connection to the lever K. Preferably this connection is accomplished by a short connection from the lower arm of lever M to the chain L aforementioned. Depression of the treadle moves lever K and drops the fender, as aforespecified.

Novel, advantageous, and practical means for holding the fender to the track after the treadle has been dropped thereon consist as follows: A fixed pawl N is connected to the car, and on this pawl slides a reciprocatory ratchet-piece $N^2$, weighted, the weight $N^3$ of which is at one end thereof. The other end of the piece $N^2$ is pivotally connected at $N^4$ to rod I.

When the fender G is dropped, the rod I moves forward and draws the ratchet-piece $N^2$ forward until the fender reaches the track. At this time the ratchet-piece $N^2$ engages the pawl N, and therefore resists any backward

movement of rod I, and consequently any tendency of the fender to uplift from the track.

Novel and valuable means for elevating the fender and for setting it in its first-named elevated position are as follows: At the platform is a pull-cord or connection P, running down through the platform and passing rearward and thence up and around a pulley $P^2$, journaled at $P^3$ to the frame of the car and then connected to the rear end of the ratchet-piece $N^2$ in such a position, substantially as shown, so that when the cord P is pulled the rear end $N^3$ of the ratchet-piece is lifted and the latter disengaged from the pawl N. The ratchet-piece $N^2$, being thus drawn upon, becomes an extension of the cord P and draws the rod I rearward, thereby lifting the fender. As the rod I moves backward the upper curved end portion $I^3$ strikes a rounded protuberance $I^4$ and raises the end $J^4$ of lever J back into engagement with the arm $K^3$ of lever K, thereby setting the fender in its uplifted position. It will be borne in mind that the chain L is at this time loose, being rendered slack by reason of the elastic return of the shield to its former position and the return of the foot-treadle M to its first position through the agency of the spring $M^2$. The fender is now in position to be again dropped when occasion requires.

I have devised a precautionary and supplemental device for adjusting the degree of resistance the shield shall make in yielding to the pressure of the shock of the body with which it may collide and in affording a definite degree of facility in unlocking it to fall. This device consists as follows: A ratchet-wheel R, fixed on shaft $R^2$, has a pawl $R^3$ engaging it, as shown. (See more particularly Fig. 9.) A coiled spring $R^4$ is fastened at one end to a fixed detent $R^5$ and at the other end to the shaft $R^2$ or the wheel R. The pawl $R^3$ is pivoted on the pivot-pin $R^6$, and the latter is fixed to an arm $R^7$, swung on the shaft $R^2$. The free end of this arm $R^7$ is connected to the chain L at a point intermediate between the shield or foot-treadle at front and the tripper-lever K at rear. The operation of this device is that when the shield is pushed upon by colliding with a body in front of it the shield will draw upon the chain L and the latter will move more or less rapidly according to the extent to which the spring $R^4$ is wound, the shield being obliged to overcome the resistance of the spring through the agency of the arm $R^7$ before drawing upon and moving the lever K to unlock the fender. This device is of great practical utility, as it enables me to set the mechanism so that the fender cannot be unlocked and dropped by a mere jar of the car, but can be set to unlock at the desired degree of ease in connection with a given degree of pressure upon the shield or treadle.

My mechanism is practical, durable, economic, and easy of operation. It is not liable to get out of order and is easily kept in order.

What I claim as new and of my invention, and desire to secure by Letters Patent, is—

1. A car-front shield, made in elastic sections, separable, and capable of ready connection at their junction, and when in use, bent into a curved form and connected by a connection forming a chord of a circle, substantially as and for the purposes specified.

2. The shield made in two half-sections, capable of ready union and separation, the shield being connected above for oscillation, and having its lower outer ends connected by the chain, hooked to one of the sections and holding the same together below, substantially as and for the purposes specified.

3. A curved shield supported above on loose connections and below provided with link $E^2$, having pin $E^3$, interfitting arm $E^4$ and in combination with said arm $E^4$, and shaft $E^5$ thereof, for moving mechanism for dropping a fender below the car, and a connection across the shield for holding the pin $E^3$ in place in said arm $E^4$, substantially as and for the purposes specified.

4. A curved shield made in sections and suspended above at the car-front, each side section provided with a link $E^2$ and pin $E^3$ on the link, in combination with an arm $E^4$ receiving the pin $E^3$, a shaft $E^5$ of arm $E^4$, for moving the mechanism for operating the fender, and a chain connecting the outer end of each side of the shield with the other, and holding the links to the arms $E^4$, and the pins $E^3$ therein, substantially as and for the purposes specified.

5. The combination of the horizontal fender and the shaft H thereof, and the tripping-rod I connected to the said shaft, and having rounded end $I^3$, and the bell-crank lever J, pivoted at $J^2$ and having arm $J^3$ and arm $J^4$, and rounded projection $I^4$, for engaging tripping-rod I, and lever K pivoted at $K^5$, and having arm $K^3$, provided with recess $K^4$, for receiving the end of lever-arm $J^4$, and connection L fixed at one end to arm $K^2$, substantially as and for the purposes specified.

6. The combination of the horizontal fender and the shaft H thereof, and the tripping-rod I connected to the said shaft, and having rounded end $I^3$, and the bell-crank lever J, pivoted at $J^2$ and having arm $J^3$ and arm $J^4$ and rounded projection $I^4$, for engaging tripping-rod I, and lever K pivoted at $K^5$, and having arm $K^3$, provided with recess $K^4$, for receiving the end of lever-arm $J^4$, and connection L and tripping-rod I in combination with a front trigger apparatus for moving the connection L, substantially as and for the purposes specified.

7. The combination of the horizontal fender and the shaft H thereof, and the tripping-rod I connected to the said shaft, and having rounded end $I^3$, and the bell-crank lever J, pivoted at $J^2$ and having arm $J^3$ and arm $J^4$ and rounded projection $I^4$, for engaging tripping-rod I, and lever K pivoted at $K^5$, and having arm $K^3$, provided with recess $K^4$, for re-

ceiving the end of lever-arm $J^4$, and connection L, and tripping-rod I, shaft H thereof, shield for operating through levers the said shaft, and lever $M^4$, and connection $M^6$, connected to connection L, and means for elastically returning the fender to place, substantially as and for the purposes specified.

8. The combination of the horizontal fender and the shaft H thereof, and the tripping-rod I connected to the said shaft, and having rounded end $I^3$, and the bell-crank lever J, pivoted at $J^2$ and having arm $J^3$ and arm $J^4$ and rounded projection $I^4$, for engaging tripping-rod I, and lever K pivoted at $K^5$, and having arm $K^3$, provided with recess $K^4$, for receiving the end of lever-arm $J^4$, and connection L, and tripping-rod I, shaft H thereof, shield for operating through levers the said shaft, and treadle in platform, and lever $M^4$ and connection $M^6$ connected to connection L, and means for elastically returning the said treadle-shield and the said treadle to place, substantially as and for the purposes specified.

9. The combination of the fender, shaft H thereof, tripping-rod I fixed to shaft H, ratchet-piece $N^2$, pivoted to tripping-rod I and having weight $N^3$ and suspended pawl N, substantially as and for the purposes specified.

10. The combination of the fender, shaft H thereof, tripping-rod I fixed to shaft H, ratchet-piece $N^2$ pivoted to tripping-rod I and having weight $N^3$ and suspended pawl N, and pulley $P^2$, cord P thereof, connected at an end to ratchet-piece $N^2$, and at the other carried forward and above the platform, within reach of the operator, substantially as and for the purposes specified.

11. The combination of the horizontal fender, shaft H thereof, tripping-rod I thereon, and lever J, and latch K, interconnecting, and connection L for unlocking the latch, and pulley $P^2$, cord P thereof, duly connected to tripping-rod I, and carried above the platform, substantially as and for the purposes specified.

12. The combination of the horizontal fender, shaft H thereof, tripping-rod I thereon, and lever J, and latch-lever K, interconnecting, and connection L for unlocking the latch, and pulley $P^2$, cord P thereof, and ratchet-piece $N^2$, and pawl N, the cord being connected to said ratchet-piece, and at its other end carried above the platform, substantially as and for the purposes specified.

13. The combination of a connection L, an apparatus for operating the said connection, a fender and mechanism for dropping it, and a ratchet-wheel, on a shaft $R^2$, carrying a spring strained between same and another point as $R^5$, arm $R^7$, pawl $R^6$ thereof, and a connection $R^8$ connected to connection L, substantially as and for the purposes specified.

14. The combination of the operating connection L, and the fender, intermediate mechanism, consisting of tripping-rod I, for working the fender, and lever $J^3$, $I^4$, $J^4$, latch $K^3$, $K^4$, $K^2$, duly connected to connection L, ratchet-piece $N^2$, pawl N, and ratchet-wheel R, shaft $R^2$ thereof, spring $R^4$, arm $R^7$, pawl $R^6$ thereof for engaging the ratchet-wheel R, and a connection $R^8$ connected to connection L, substantially as and for the purposes specified.

15. The combination of the operating connection L, and the fender, intermediate mechanism, consisting of tripping-rod I for working the fender, and lever $J^3$, $I^4$, $J^4$, latch $K^3$, $K^4$, $K^2$, duly connected to connection L, ratchet-piece $N^2$, pawl N, and ratchet-wheel R, shaft $R^2$ thereof, spring $R^4$, arm $R^7$, pawl $R^6$ thereof for engaging the ratchet-wheel R, and a connection $R^8$ connected to connection L, and pulley $P^2$, and cord P duly connected to the tripping-rod I, and carried to the platform, substantially as and for the purposes specified.

16. The combination of the operating connection L, and the fender, intermediate mechanism, consisting of tripping-rod I for working the fender, and lever $J^3$, $I^4$, $J^4$, latch $K^3$, $K^4$, $K^2$, duly connected to connection L, ratchet-piece $N^2$, pawl N, and ratchet-wheel R, shaft $R^2$ thereof, spring $R^4$, arm $R^7$, pawl $R^6$ thereof for engaging the ratchet-wheel R, and a connection $R^8$ connected to connection L, and pulley $P^2$, and a cord P duly connected to the tripping-rod I, and carried to the platform, and the oscillatory shield carrying the links E, pivoted to arms for operating the shaft, arm $L^2$, duly connected to connection L, substantially as and for the purposes specified.

LYTLE J. HUNTER.

Attest:
WM. E. JONES,
K. SMITH.