

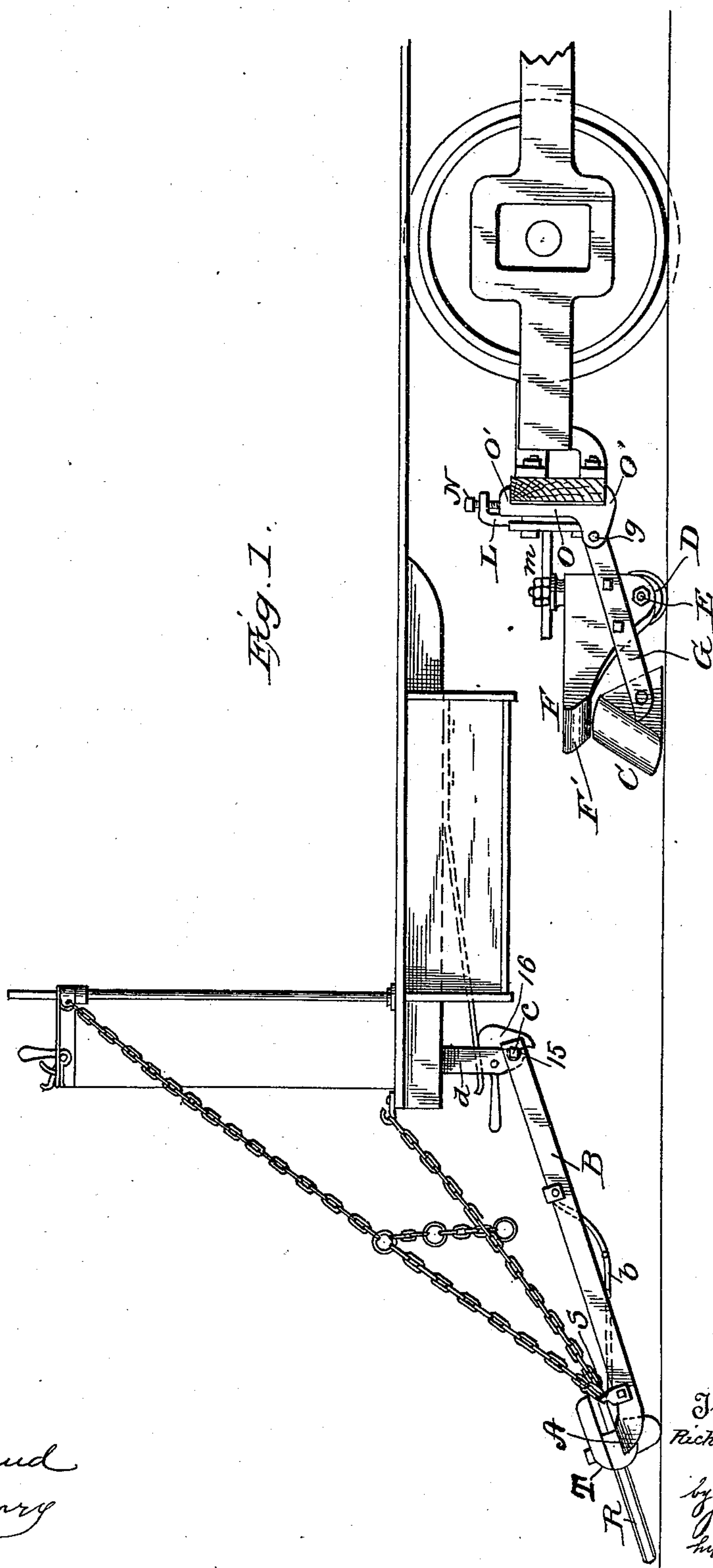
(No Model.)

3 Sheets—Sheet 1.

R. A. BREUL.  
STREET CAR FENDER.

No. 547,707.

Patented Oct. 8, 1895.



Witnesses  
*F. L. Ouraud*  
*Jos. Gregory*

Inventor  
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his Attorney.

(No Model.)

3 Sheets—Sheet 2.

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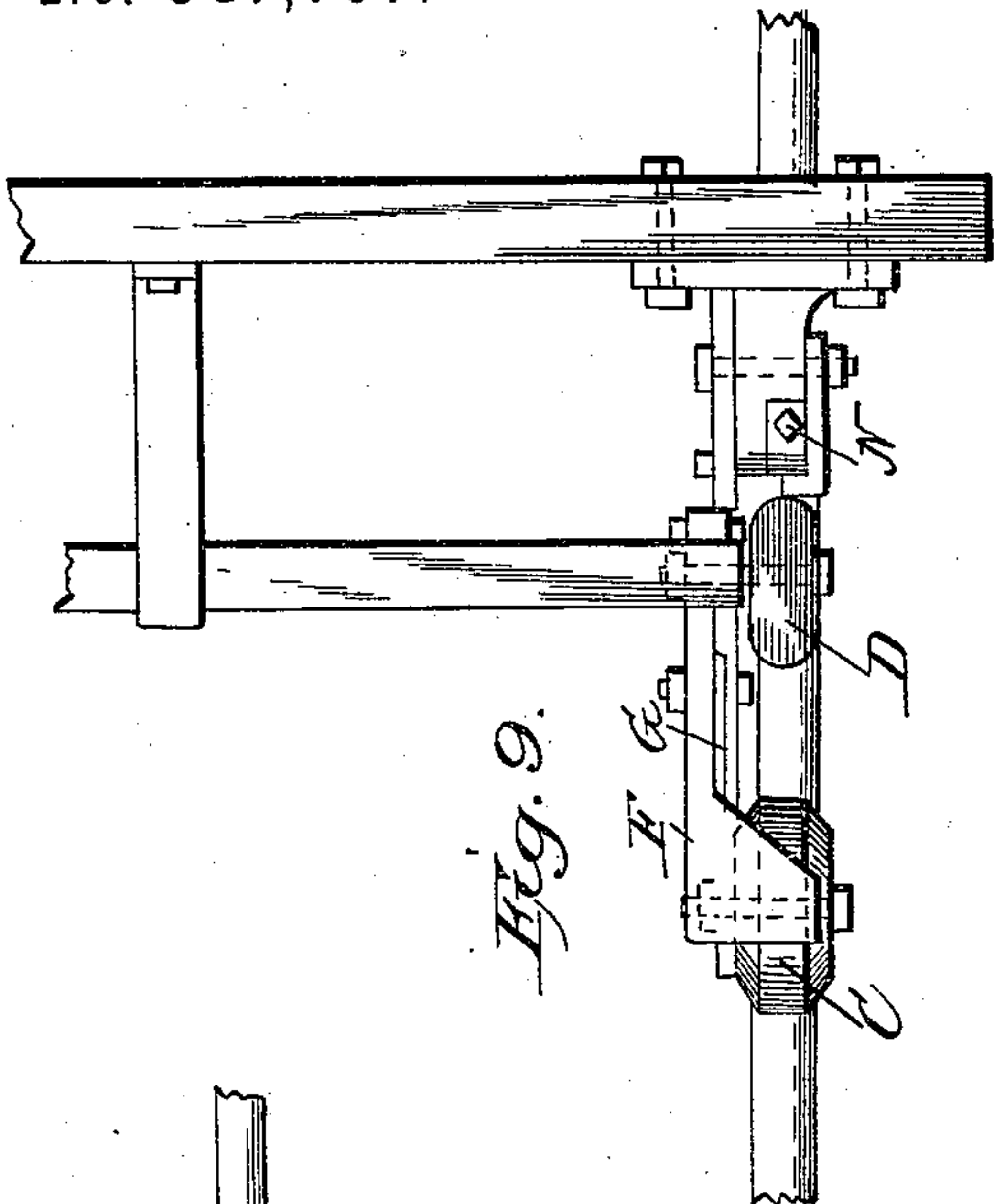


Fig. 9.

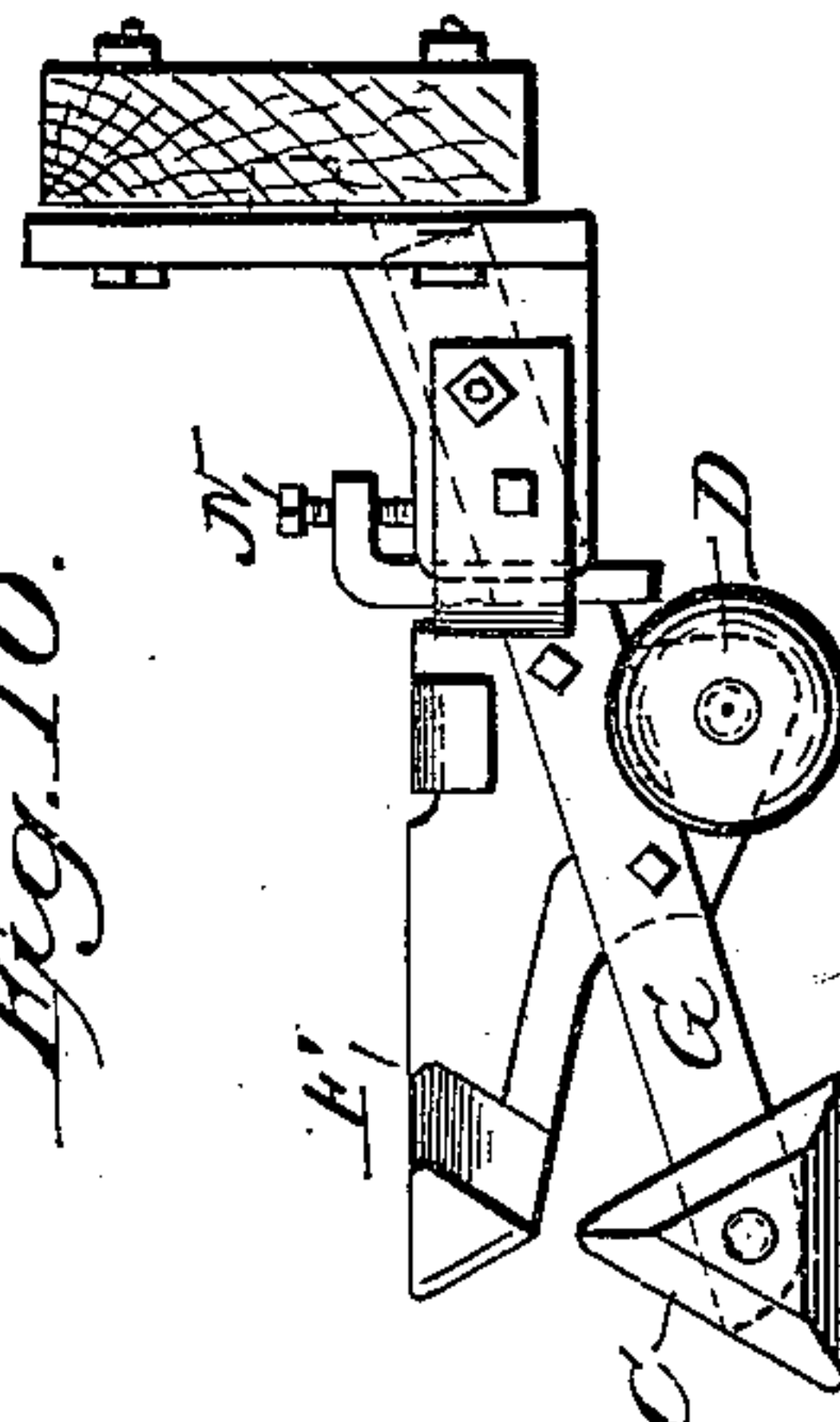


Fig. 10.

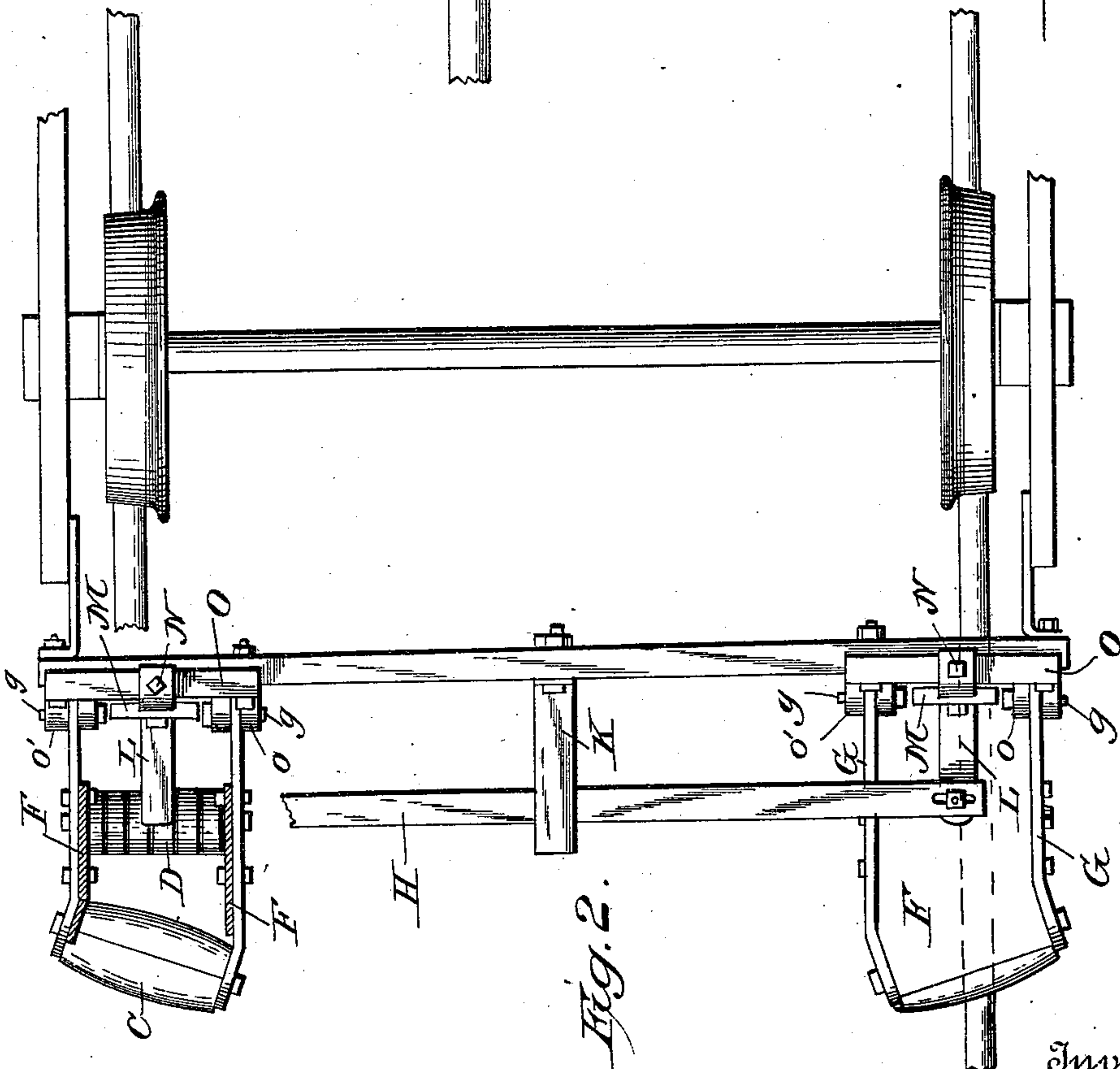


Fig. 2.

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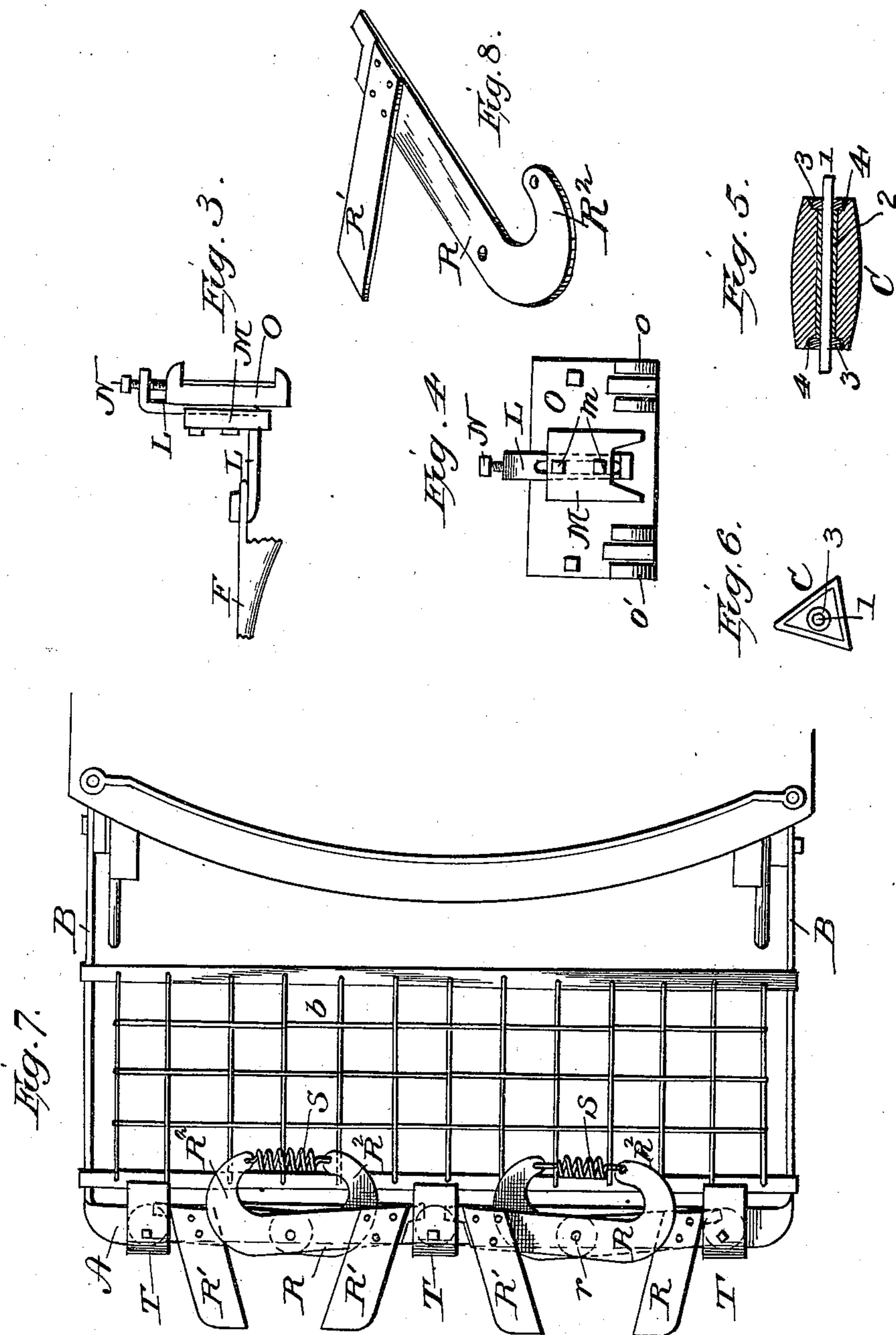
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3 Sheets—Sheet 3.

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No. 547,707.

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# UNITED STATES PATENT OFFICE.

RICHARD A. BREUL, OF BRIDGEPORT, CONNECTICUT.

## STREET-CAR FENDER.

SPECIFICATION forming part of Letters Patent No. 547,707, dated October 8, 1895.

Application filed March 23, 1895. Serial No. 542,951. (No model.)

*To all whom it may concern:*

Be it known that I, RICHARD A. BREUL, a citizen of the United States, residing at Bridgeport, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Street-Car Fenders; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention consists in improvements in car-fenders, as hereinafter fully described and claimed. Since perfecting the car-fenders described in my application of November 5, 1894, Serial No. 527,956, I have discovered some additional improvements on such fenders which will greatly increase the efficiency and durability of the apparatus employed. By an automatic mechanism attached to the front bar of the end fender of the car, as shown in Figures 7 and 8 of the drawings, the fender is formed into a veritable wedge which cannot fail to run under and pick up a human body, no matter in what position the same may be lying, and deposit it on the platform of the fender. This mechanism and its operation will be hereinafter described in detail. I have also constructed a much-improved wheel-fender or life-guard. It has been the aim of many inventors to construct a car-fender which would safely operate in close proximity to the ground, and I have produced in this invention a wheel-fender which possesses the four important features necessary for a successful device of this kind: It always remains in an operative position close to the rails and ground. It is not injured or rendered inactive by the rocking of the car. It pushes all loose objects, whether large or small, from the rails and away from the car, and on striking any immovable object, such as the raised end of a rail or a projecting cobblestone, even if such obstruction should be several inches high, will easily slip over such obstruction and immediately regain its proper operative position without any shock or injury to the fender or car. In my before-mentioned application for patent on street-car fenders, filed November 5, 1894, I have provided for auxiliary fenders before each wheel. Although the said fenders answer their pur-

pose, I have found by repeated experiments that a wheel-fender constructed in accordance with this present invention is decidedly preferable to the one shown in said application of November 5, 1894.

The important feature of this device, which embodies the real gist of my invention, is a bar or body triangular in cross-section, pivoted at its ends to allow of rotation on its longitudinal axis, which is mounted obliquely across the rail so as to impel loose objects to the outer side of the tracks and car, and with one of its three sides or faces resting on or in close proximity to the top of the rail, while its forward corner and side are in active position to operate as a fender until this corner strikes an immovable object, when the bar will freely turn, making a one-third revolution, and immediately assume the same operative position as before, only with a change of sides, as hereinafter described. This triangular fender will not turn, however, when striking an object lying loosely on the rails, but will remove the same instantly by pushing it away to the outer side of the tracks, out of reach of the wheels. The reason for this automatic action is the downward pressure exerted by contacting loose objects on the inclined front face of the triangular member, while an immovable solid obstruction rising from the road-bed strikes the forward lower edge of the same at a direction tangential to its axis, and therefore the triangle instantly yields to this pressure, revolves on its axis, passes over the obstruction, and immediately after assumes its proper operative position.

In the accompanying drawings, in which the same letters and numerals of reference indicate corresponding parts in the several figures, Fig. 1 is a side elevation of the forward part of a car provided with my invention. Fig. 2 is a top plan view, partly in section, illustrating the wheel-fenders. Figs. 3 and 4 are detail views, hereinafter described, of parts of the wheel-fenders. Figs. 5 and 6 are respectively longitudinal and transverse sections of the triangular member of the wheel-fender. Figs. 7 and 8 illustrate the improvements in the front or end car-fender. Fig. 9 is a top plan view, and Fig. 10 a side view, of the wheel-fender as modified to adapt it for a track in bad condition and with de-



fective pavement between and at the side of the rails, as hereinafter described.

The side bars B B and the front bar A of the front or end fender are in this construction preferably made in one piece, a flat metal bar bent into the approximately U shape shown and twisted at the corners, so that the transverse front bar A will lie at an incline, as shown, to give the proper surface for the attachment of the automatic scrapers or levers R. The pins *c* in the rear ends of the side bars B are pivotally and detachably held in the notches 15 in the rear edges of the brackets *d* by the pivoted counterbalanced dogs 16, as described in detail and claimed in my application filed November 5, 1894; also, the fender-frame is provided with the netting or platform *b* and with the system of supporting-chains which are described in detail and claimed in my above-mentioned application, allowed February 4, 1895.

The levers R, which are arranged and operated in pairs, as shown, are formed each with a body portion which lies longitudinally upon the inclined front bar A of the fender-frame and at its outer end with a flat forwardly-projecting arm R', inclining slightly toward the center, the inner end of each lever having a rearwardly curving arm R<sup>2</sup>. The bodies of each pair of levers overlap and are secured upon the inclined surface of bar A by a pivot-bolt *r* passing through the central part of each lever-body, while the rearwardly-curved arms R<sup>2</sup> are connected by a coil-spring S of sufficient power.

T indicate guide-brackets, beneath which the ends of the levers play and which stop them from advancing too far. It will be seen that when the fender-frame is dropped the ends R' of the levers will automatically scrape the ground, being held projected forward and in contact with it by the action of the coil-springs S acting on each pair of levers. On striking an object that cannot be moved (picked up) the coil-springs will give to enable the outer arms R' of the levers to draw back, the levers turning on their central pivot until the object is passed, when the springs S at once automatically return the levers to their former position, with the ends of arms R' scraping the ground. A human body or limb, however, will without fail, owing to the action of these inclined flat lever-arms operating like a wedge shoving beneath the body or arm, be picked up and slide up over the levers into the screen *b*. In Fig. 8 one of the levers is partly broken away and its position indicated by dotted lines in order to more clearly show the form of the lever beneath it. A number of cast-iron bearings or supports *u*, of properly-rounded shape for passing over obstructions on the track, are firmly secured under the front bar A.

The principal and most important feature of the wheel-fenders consists of the triangular body or bar C. This is preferably arranged in connection with a hollow box-like frame F,

to the sides of which are bolted the supporting-bars G G, the rear ends of these bars being hinged on bolts *g* in lugs *o o'* of a supporting base-plate O. These base-plates O O are bolted to the front side of the guard-board *x* of the truck in front of the wheels, having upper and lower flanges O', which inclose the bar, and a rubber packing Y, interposed between the two to prevent jarring. Through the rear lower sides of frame F is secured a rod or bolt E, on which are loosely mounted disks D, which run upon the rails and upon which the fenders rest, supporting the frame F and side bars G, so that the triangular member C almost touches the top of the rail. The front ends of the side bars G and of the frame F are inclined outwardly, as shown, so that the triangular member C, pivotally mounted between the front extremities of the side bars in the manner hereinafter described, stands across the rail at an angle, while its axis is parallel with the ground. This member C is three-sided, triangular in cross section, and stands, as shown, with one of its three faces close to the rail while the car is traveling forward. The rear end of the top plate of each frame rests upon the lower arm of an L-shaped supporting-iron L, which may be raised or lowered by a set-screw N, thereby adjusting the frames F and the several parts of the fender which they carry—the disks D, the triangular member C, &c.—the side bars G turning on their rear hinged ends to permit of this vertical adjustment. The bolts *g*, which secure the rear ends of the side bars G, are slipped through the lugs *o o'* from the inner side or center of base-plates O, and a stop-plate M is then inserted and secured to the angle-iron L, resting between the heads of these bolts and therefore holding them in place without the use of nuts, as will be seen. These plates M are secured to the angle-irons L by the same bolts *m*, which pass through slots in said bars and secure them adjustably to the base-plates O, so that they are vertically adjustable by turning the screws N.

H indicates a spring-bar for the pair of fenders, its ends resting upon the same and being connected thereto, as shown, preferably by bolts passing through slots in the ends of the bar, pressing both fenders downward, the pressure being regulated by an angle-iron K, adjustably secured to the guard-board *x* by bolts passing through its slotted vertical member, while its lower member extends, as shown, over the center of spring-bar H.

The forward end of the frame F slightly overhangs the triangular member C, as shown, and its forward end face F' is inclined at an angle, so that said face is nearly at right angles with the inclined front face of the triangular body C, Fig. 1 showing this most clearly, these two inclined faces forming a channel or groove between them for properly guiding and removing loose objects or bodies encountered by the fender in the desired direction away from the tracks and car.



It will be seen that in operation when the triangular body C of the fender comes in contact with an immovable object, such as a raised rail end or projecting cobble-stone, the said solid obstruction rising from the road-bed will strike the forward lower edge of the body C at a direction tangential to its axis, causing the part C to instantly yield to the pressure, revolve on its axis for a one-third revolution, passing over the obstruction as the pivoted fender rises against the pressure of the spring-bar H, and immediately after passing the obstruction again assume its proper operative position, only with a change of sides. When the fender comes in contact with any loose object, the downward pressure exerted by the contacting loose object upon the inclined front face of the triangular body C will prevent said body from turning, while it will raise the loose object, and owing to the inclined position in which it stands across the rail will push the same to the outer side of the tracks and car, the inclined end F' of the frame F operating as above stated in connection with the triangular member C and forming a channel to properly guide and remove loose objects encountered by the fender in the desired direction away from the tracks and car.

To prevent any heavy or injurious jar to the triangular member C, I construct and mount the same in the following manner, as illustrated in detail in Figs. 5 and 6: The shaft 1, extending through the center of the member, has a rubber sleeve or tube 2, the triangular member C slipping tightly over this tube, and a collar 3 is forced on each end of the shaft 1 and into a corresponding recess 4 in the end of the triangular member, the ends of the shaft 1 being loosely mounted in the ends of the side bars G to turn freely therein. It will be seen that by this construction that the triangular member is given an interior elastic packing surrounding its central longitudinal axis, which will effectually take up any jar, preventing any strain or injury to the several parts.

Where the track is in bad condition, with defective paving between and at the side of the rails, I prefer to form the wheel-fender in the somewhat modified form shown in Figs. 9 and 10, the only difference from the construction above described being that the triangular member C is made of such width that its tread is slightly less than the width of the rail-head, the frame F being of corresponding width, and a single supporting roller or disk D being used, while but one side bar G is needed.

I claim as my invention—

1. As an improvement in car fenders, a forwardly projecting U-shape frame designed to be pivoted to a car, said frame having its forward bar inclined at a different angle to that of its side-bars, bearings or supports secured to the under side of said forward bar, spring-held scrapers or levers pivoted on said forward bars, substantially as and for the purpose set forth.

ward bars, substantially as and for the purpose set forth.

2. As an improvement in car fenders, a forwardly projecting U shape frame designed to be pivoted to a car, said frame having its forward bar inclined at a different angle to that of its side bars, bearings or supports secured to the underside of said forward bar, scrapers or levers pivoted in pairs on said forward bar, springs connected to the inner arms of each of said pairs, substantially as and for the purpose set forth.

3. As an improvement in car fenders, a forwardly projecting U-shape frame designed to be pivoted to a car, said frame having its forward bar inclined at a different angle to that of its side bars, bearings or supports secured to the underside of said forward bar, scrapers or levers having overlapping portions and pivoted in pairs on said forward bar, springs connecting the inner arms of each of said pairs, substantially as set forth.

4. As an improvement in car fenders, a forwardly projecting U-shape frame designed to be pivoted to a car, said frame having its forward bar inclined at a different angle to that of its side-bars, bearings or supports secured to the under side of said forward bar, scrapers or levers pivoted in pairs to said forward bar and having overlapping portions, outwardly projecting arms or members, and inner curved arms, springs connecting the curved arms of each of such pairs, substantially as set forth.

5. As an improvement in car fenders, a forwardly projecting U-shape frame designed to be pivoted to a car, said frame having its forward bar inclined at a different angle to that of its side bars, bearings or supports secured to the underside of said forward bar, scrapers or levers pivoted in pairs to said forward bar and having overlapping portions, outwardly projecting arms or members, and inner curved arms, springs connecting the curved arms of each of said pairs, guide-arms secured to said forward bar and engaging projecting portions of said horizontal members, substantially as set forth.

6. In a wheel fender, a frame or casing, pivoted supporting bars therefor, and a triangular shaped member pivotally mounted at an angle in bearings in said frame or casing, substantially as set forth.

7. In a wheel fender, a frame or casing, pivoted supporting bars therefor, a triangular shaped member pivotally mounted at an angle in said frame or casing, and means for vertically adjusting said frame or casing, substantially as set forth.

8. In a wheel fender, a frame or casing, pivoted supporting bars therefor, a triangular shaped member pivotally mounted at an angle in said frame, supporting disks or rollers also mounted in said frame, and means for vertically adjusting said frame, substantially as set forth.

9. In a wheel fender, a base or supporting plate, pivoted arms or bars projecting there-



from, a frame or casing secured between said arms or bars, a triangular shaped member pivotally mounted at an angle in said frame, supporting disks or rollers also mounted in said frame, and means whereby said frame may be vertically adjusted.

10. In a wheel fender, a base or supporting plate, pivoted arms or bars projecting therefrom, a frame or casing secured between said arms or bars, a triangular shaped member pivotally mounted at an angle in said frame, supporting disks or rollers also mounted in said frame, an L-shape arm secured to said base-plate and engaging said frame or casing, and means for adjusting said L-shape plate, substantially as set forth.

11. In a wheel fender, a base or supporting plate, pivoted arms or bars projecting therefrom, a frame or casing secured between said arms or bars, a triangular shaped member pivotally mounted at an angle in said frame, supporting disks or rollers also mounted in said frame, an L-shape arm or plate secured to said base-plate and provided with an overhanging portion, and an adjusting screw mounted in said overhanging portion, substantially as set forth.

12. In a wheel fender, a base or supporting plate, pivoted arms or bars projecting therefrom, a frame or casing secured between said arms or bars, a triangular-shaped member pivotally mounted at an angle in said frame, supporting disks or rollers also mounted in said frame, an L-shape arm or plate having slots or openings therein, rods or bolts passed through said slots for securing said arm or plate to the base or supporting plate, said L-shape arm being provided with an overhanging portion, and an adjusting screw in said overhanging portion, said frame or casing being secured to said L-shape arm or plate, substantially as set forth.

13. In a wheel fender, a base or supporting plate, pivoted arms or bars projecting therefrom, a frame or casing secured between said arms or bars, a triangular shaped member

pivotally mounted at an angle in said frame, supporting disks or rollers also mounted in said frame, an L-shape arm or plate secured to said base-plate and connected to said frame, an adjusting screw mounted in said L-shape arm or plate, and a spring for normally holding said frame in a lowered position, substantially as set forth.

14. In a wheel fender, a base or supporting plate, ears or lugs projecting therefrom, arms or bars pivoted on rods or bolts supported by said ears or lugs, a locking plate for said rods or bolts, a frame or casing secured between said arms or bars, and a triangular shaped member mounted at an angle in said frame, substantially as set forth.

15. The herein-described wheel fender, comprising a pivotally supported frame or casing, a pivot-rod mounted at an angle in said casing, an elastic sleeve secured on said pivot rod, a triangular shaped member also secured on said rod and surrounding said sleeve, and collars secured on said rod at each end of said triangular member, substantially as set forth.

16. In a wheel fender a front or contact member of triangular cross section, loosely journaled in levers subject to up and down movement, its longitudinal axis crossing the rail and normally presenting one of its sides as a contacting or fending surface; substantially as set forth.

17. In a wheel fender a triangular shaped contact member, loosely pivoted on its longitudinal axis in levers swinging freely up and down and which levers are journaled in a plate secured to the guard board of the car, the triangular member being so disposed as to have its axis crossing the rail and lying parallel with the ground; substantially as set forth.

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

RICHARD A. BREUL.

Witnesses:

SIGMUND LOEWITH.

SIGMUND DORMITZER.