

No. 768,040.

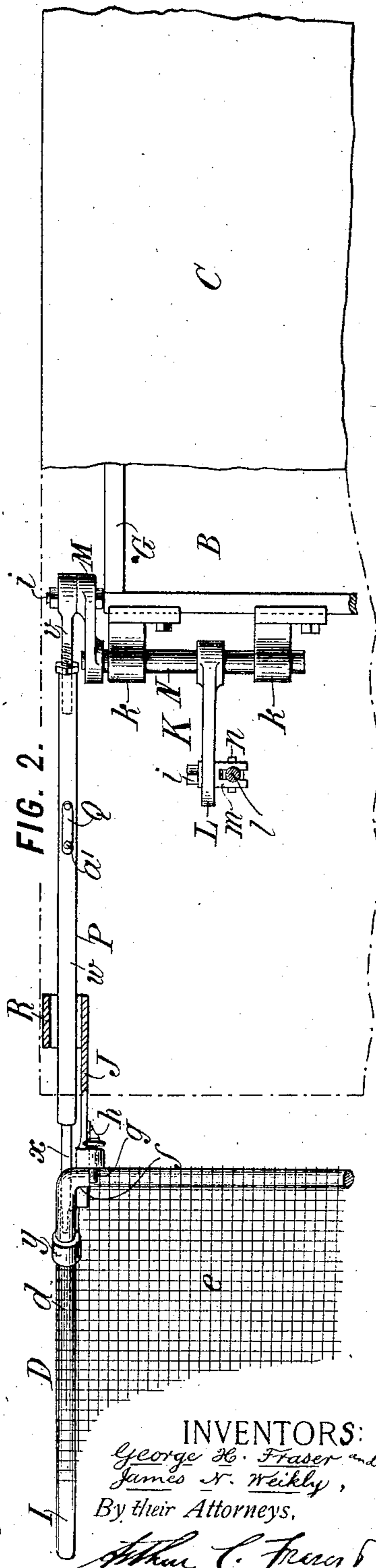
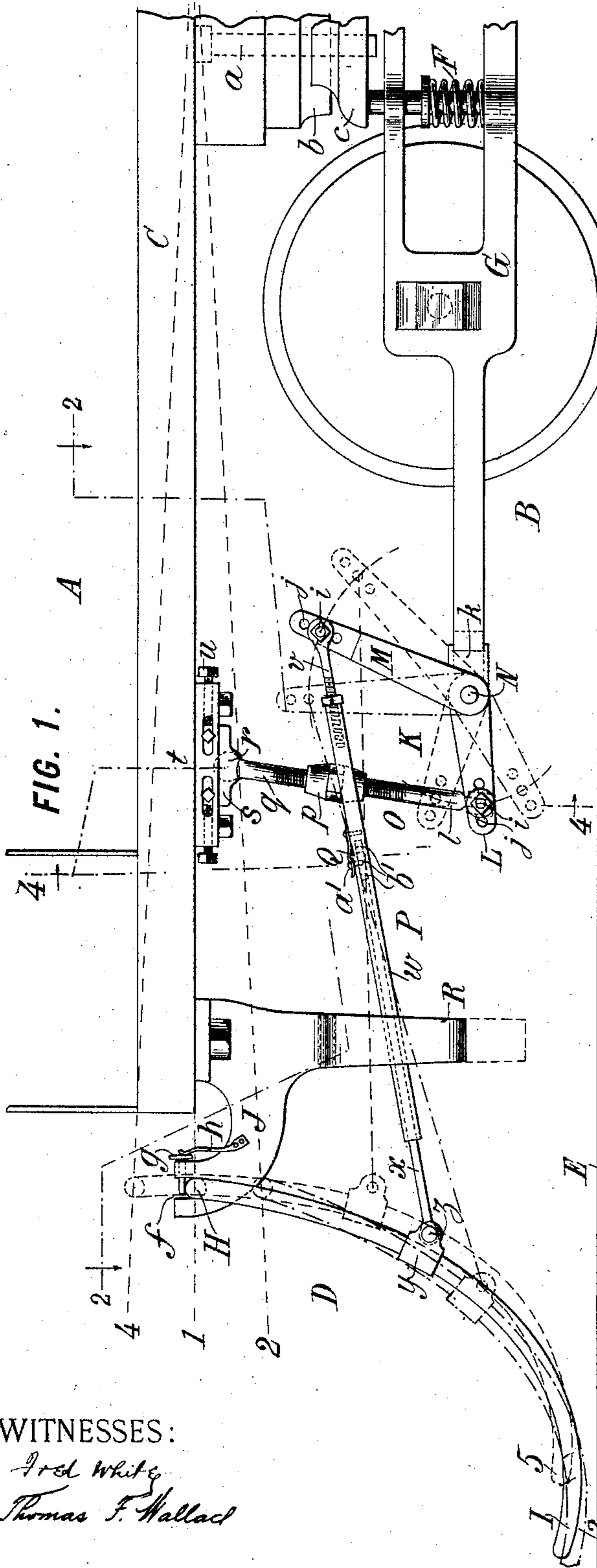
PATENTED AUG. 23, 1904.

G. H. FRASER & J. N. WEIKLY.
CAR FENDER.

APPLICATION FILED DEC. 31, 1897.

NO MODEL.

2 SHEETS—SHEET 1.



WITNESSES:

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Thomas F. Wallack

INVENTORS:

George H. Fraser and
James N. Weikly,
By their Attorneys,

William C. Fraser & Co.

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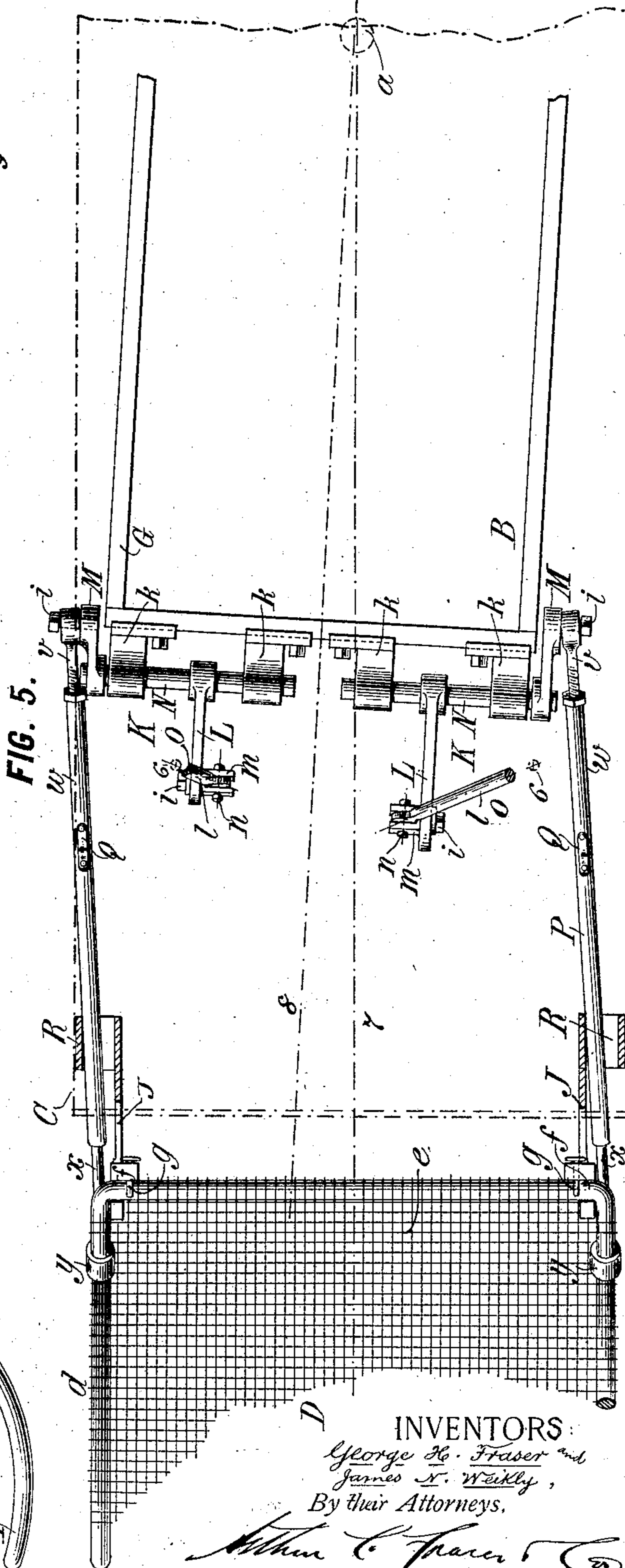
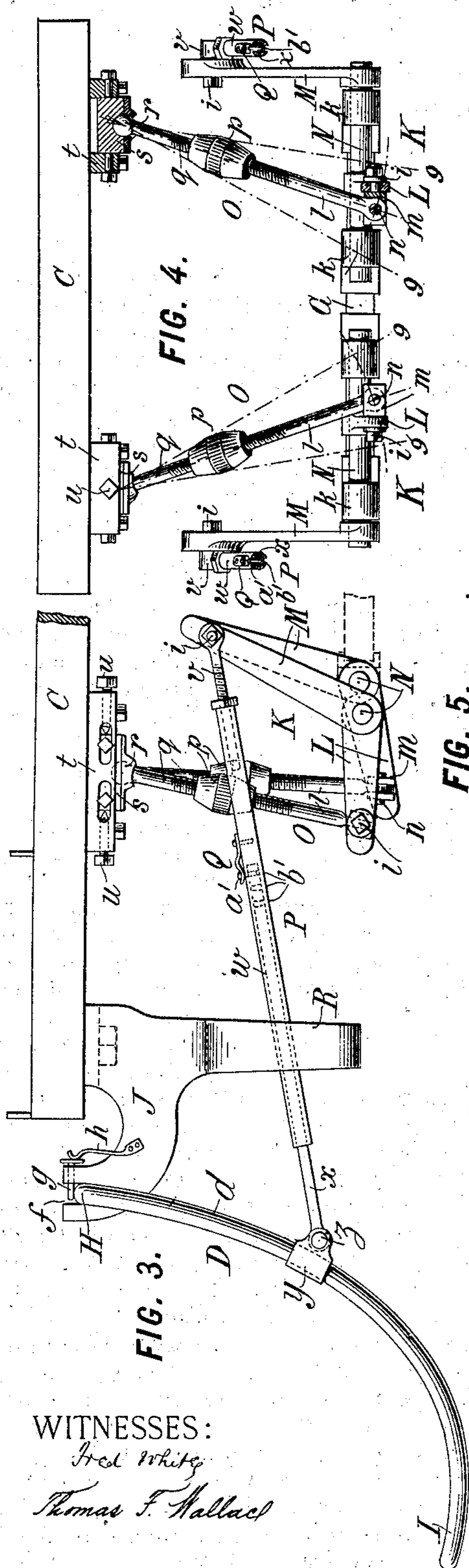
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UNITED STATES PATENT OFFICE.

GEORGE H. FRASER, OF BROOKLYN, NEW YORK, AND JAMES N. WEIKLY, OF JERSEY CITY, NEW JERSEY; SAID WEIKLY ASSIGNOR TO SAID FRASER.

CAR-FENDER.

SPECIFICATION forming part of Letters Patent No. 768,040, dated August 23, 1904.

Application filed December 31, 1897. Serial No. 665,130. (No model.)

To all whom it may concern:

Be it known that we, GEORGE H. FRASER, of Brooklyn, Kings county, New York, and JAMES N. WEIKLY, of Jersey City, Hudson county, New Jersey, have jointly invented certain new and useful Improvements in Car-Fenders, of which the following is a specification.

This invention relates to car fenders or guards, and especially to devices of this character in which the fender is automatically raised and lowered in opposition to the oscillation of the car-body to preserve it at a predetermined distance from the track and in which the truck is tilted laterally of the body to cover curvatures of the track.

The invention provides certain improvements in fenders, especially applicable to those having both the features specified, and is designed to provide an improved swinging fender and improved means for holding and swinging it.

In carrying out the preferred form of our improvements as applied to a car comprising a running-gear and a body carried thereby and movable vertically and laterally thereof, the body having hinged to it a forwardly-projecting fender, we provide a lever of the first class, a connection between one arm of this lever and the part of the car which is movable relatively to the running-gear, a thrust-rod connected to the other arm of the lever, a fulcrum for the lever intermediate of these connections and carried by preference from the part of the car which is relatively immovable vertically, and a separable connection between the other end of the thrust-rod and a point on the fender remote from and in a different horizontal and vertical plane than the axis on which the fender is pivoted to the car. The thrust-bar has a forward and rearward movement imparted to it by the arm to which it is connected, which arm swings longitudinally of the car, and the other arm has a vertical movement imparted to it, being swung vertically with the vertical oscillation of the car, which is transmitted to it by the connection between the car and this arm. These parts suffice for swinging the outer end of the

fender up as the car-body falls and down as the car-body rises. To provide for lateral swinging of the truck, we prefer to provide means for projecting one side of the fender forwardly and the other side thereof rearwardly as the truck is deflected laterally of the body, preferably by duplicating the described devices and inclining the connection between the levers and the body, so that the levers will be differently tilted with deflection of the truck.

The accompanying drawings show the preferred form of our invention as applied to a multiple-truck car, showing a device embodying the feature for controlling the elevation of the fender and also the feature for controlling its lateral position, and in which drawings—

Figure 1 is a fragmentary side elevation of a double-truck car, showing our improvements in full lines in the mean position vertically of the car-body and in dotted lines in the extreme up and down positions of the latter. Fig. 2 is a fragmentary plan view thereof, partly in horizontal section. Fig. 3 is a fragmentary side elevation showing the parts in the positions occupied during lateral deflection of the truck. Fig. 4 is a vertical cross-section of the car cut on the line 4 4 of Fig. 1; and Fig. 5 is a fragmentary plan view, partly in horizontal section, showing the parts in the positions occupied in Fig. 3, the truck being deflected to the right.

Referring to the drawings, let A indicate a car; B, the running-gear thereof; C, the body thereof; D, a fender therefor, and E the track. These parts may be of any suitable construction, the parts shown being taken as convenient examples for illustration.

As shown, the running-gear is subject to practically no vertical movement, and the body is subject to considerable vertical movement, this being caused by teetering or variations of load being taken up in the springs F, by which the body is supported from the frame G of the truck. The body and truck are swiveled to permit tilting of the one laterally of the other on the axis of the king-bolt *a*, the seat *b* on the body-bolster riding

movably on the chair *c* for this purpose. The fender D may be the ordinary fender, hinged or pivoted at its upper edge and at an elevated point on an axis H to the body C and free to swing at its lower point I toward and from the track E. It is shown as a rectangular metal frame *d*, crossed by netting *e*, having a concave front and convex rear and supported from the car-body by a bracket J, which is bolted to the latter and has an open notch *f*, into which the frame *d* is dropped and in which it is held by a bolt *g*, pressed in by a spring *h*, these parts being duplicated at each corner of the car, so that the fender can be removed from one end to the other according to the direction of running.

We will now describe in detail the construction shown as constituting the preferred form of our improvements for automatically preserving the outer end of the fender in the proper vertical relation to the track. This construction comprises a lever of the first class K, having an arm L, swinging vertically, and an arm M, swinging longitudinally relatively to the car-body and fulcrumed on an axis N between these parts, preferably to the part of the car which is subject to relatively little or no vertical movement, as the frame G of the truck, a connection O between the vertically-moving arm L and a part of the car having relatively great vertical movement, as the body C and a thrust-rod P between the longitudinally-moving arm and a point on the fender intermediate of its ends and at a point remote from and in a different horizontal plane than the axis H of the fender. The lever K is preferably a bell-crank or elbow lever, to the arms of which the connection O and the rod P are adjustably connected, as by bolts *i*, entering holes *j* in the arms. Brackets *k* are preferably employed for connecting the lever to the frame G. The connection O is preferably longitudinally adjustable in itself and also adjustable longitudinally of the car. It is shown as comprising a bottom piece *l*, swiveled to the arm L by a stud *m* and screw *n* and as screw-threaded at its upper end, where it receives a turn-buckle *p*, which also receives the reversely-screw-threaded end *q*, which end terminates in a ball *r*, swiveled in a socket-piece *s*, slidingly held in a chair *t*, which is fixed to the body C and carries screws *u*, by which the piece *s* can be adjusted. The thrust-bar P is longitudinally adjustable and is shown as comprising an eyepiece *v*, loosely connected by the bolt *i* to the arm M and screw-threaded at its forward end, a tube *w*, screwed on this end and locked by a set-nut, and an eyepiece *x*, slipped into the other end of the tube and connected to an eye *y* on the fender by a bolt *z*. The end of the piece *x* is held adjustably and separably on the rest of the thrust-rod in any suitable manner, as by the catch Q, the pin *a'* of which may enter any of the holes *b'*

in the rod. The piece *x* is shown as permanently attached to the fender and is removed from the socket in the tube *w* with the removal of the fender, so that the pieces *x* need not be duplicated at opposite ends of the car. We prefer to provide a guide and protector R for each rod P, which also preferably supports the end of the rods when the fender and the pieces *x* are removed. The holder R is shown as a looped extension on the bracket J, through which the tube *w* freely passes and by which it is guided and held. In operation, according to this feature of our invention, the vertical movements of the body C will be transmitted with increased extent to the rod P, being transformed into movements longitudinally of the car by the lever K, and these longitudinal movements will be transmitted to the fender intermediate of its ends, causing it to swing out and in. If the connection between the rod P and fender is in front of and below the axis H, as shown, the lever K and connection therewith will be arranged to produce a forward thrust of the rod P with a fall of the body C and a rearward thrust with a rise thereof. The forward thrust will swing the fender forwardly and upwardly on its axis, so that the car can fall from the dotted line 1 in Fig. 1 to the dotted line 2 therein without bringing the front of the fender closer to the track than the position indicated by the dotted line 3, and the car can rise to the dotted line 4 without bringing the fender end to a higher position than the dotted line 5. Thus it will be seen that the front end of the fender can be manipulated to preserve its proximity to the track during all ordinary limits of vertical oscillation of the body, these limits being ordinarily confined to eight or ten inches above and below the mean.

As thus far described the device is applicable especially to cars in which the running-gear is practically immovable laterally of the body or in which its movability is so limited that the operation of the compensating mechanism is not materially affected by the lateral swing of the truck in rounding curves. To provide for cases where this swing is great enough to affect the operation of swinging the fender up and down from the truck, our invention introduces a feature of improvement consisting of means for compensating for the lateral deflection between the truck and body, so that this deflection shall not interfere with or affect the operation of swinging the fender out and in to preserve its vertical position. Thus our invention overcomes one of the greatest impediments heretofore existing to the use of connections for governing the fender from the truck with multiple-truck cars. We prefer, according to this feature of our invention, to employ two elbow levers K, bars P, and connections O, one for each side of the fender, and to incline the

connections O oppositely between the body and the truck, so that when these parts are in alinement the connections will occupy a mean position of inclination and will hold the arms M in like position; but when the truck swings to one side the one connection will be brought more toward the vertical and the other more toward the horizontal, thus swinging one arm L down and the other up, and consequently thrusting one rod P forward and drawing the other backward, the parts being adjusted to effect sufficient differential movement to preserve the ends of the arms M in substantially the same line at right angles to the length of the body at all positions within the limits of lateral motion between the truck and body. This is best seen in Figs. 3, 4, and 5, the dotted lines 7 and 8 indicating the longitudinal centers of the body and truck when the truck is run onto a curve of the track toward the right, the dotted circles 6 indicating the axes of the balls *r* of the connections O and dotted lines 9 indicating the extremes of swing of the connections O. The truck is shown with one corner projected and the other retracted in Fig. 5, in which position the one lever K is tilted up and the other lever K is depressed, as best seen in Fig. 3, the extent of shifting being enough to keep the ends of the arms M alined, so that the fender D will remain parallel with the body C.

It will be seen that our invention provides improvements which can be readily and advantageously availed of, and it will be understood that we do not limit ourselves to the particular combination of features nor to the particular structural details set forth as embodying the preferred form of our invention, since our improvements can be employed in whole or in part, according to such modifications as circumstances or the judgment of those skilled in the art may dictate, without departing from the spirit of the invention.

What we claim is—

1. In car-fenders and the like, the combination with a body subject to relatively great vertical movement, and a running-gear subject to relatively little vertical movement, of a lever of the first class having an arm swinging upwardly, and another arm swinging forwardly and fulcrumed intermediate of said arms to one of said parts, a positive connection between the other of said parts and the upwardly-swinging arm of said lever, swinging the latter with relative movements between said parts, a fender hinged to said body and having a front end swinging out and in on the axis of the hinge connection between the fender and body, and a thrust-rod connected to the forwardly-swinging arm of said lever and extending thence from and connected to said fender at a point below and in a different horizontal plane than the hinge-axis of the latter, said thrust-rod moving forward and rearward longitudinally of the body,

and swinging the fender outward as the body falls, and pulling it inward as the body rises.

2. In car-fenders and the like, the combination with a body subject to relatively great vertical movement, and a running-gear subject to relatively little vertical movement, of a lever of the first class having an arm swinging upwardly, and another arm swinging forwardly and fulcrumed intermediate of said arms to one of said parts, a positive connection between the other of said parts and the upwardly-swinging arm of said lever, swinging the latter with relative movements between said parts, a fender hinged to said body and having a front end swinging out and in on the axis of the hinge connection between the fender and body, and a thrust-rod connected to the forwardly-swinging arm of said lever and extending thence from and connected to said fender at a point intermediate of the axis and the outer end of the fender, below the axis of the hinge thereof, remote from and in a different horizontal plane than the hinge-axis of the latter, said thrust-rod moving forward and rearward longitudinally of the body, and swinging the fender outward as the body falls, and pulling it inward as the body rises.

3. In car-fenders and the like, the combination with a body subject to relatively great vertical movement, and a running-gear subject to relatively little vertical movement, of a lever of the first class having an arm swinging upwardly, and another arm swinging forwardly and fulcrumed intermediate of said arms to one of said parts, a positive connection between the other of said parts and the upward-swinging arm of said lever, swinging the latter with relative movements between said parts, a fender hinged to said body and having a front end swinging out and in on the axis of the hinge connection between the fender and body, and an adjustable thrust-rod connected to the forwardly-swinging arm of said lever and extending thence from and connected to said fender at a point between the forward end of the fender and the hinge-axis of the latter, said thrust-rod moving forward and rearward longitudinally of the body, and swinging the fender outward as the body falls, and pulling it inward as the body rises.

4. In car-fenders and the like, the combination with a body subject to relatively great vertical movement, and a running-gear subject to relatively little vertical movement, of a lever of the first class having an arm swinging upwardly, and another arm swinging forwardly and fulcrumed intermediate of said arms to one of said parts, a positive connection between the other of said parts and the upwardly-swinging arm of said lever, swinging the latter with relative movements between said parts, a fender hinged to said body on an axis fixed relatively thereto and having

a front end swinging out and in on the axis of the hinge connection between the fender and body, and a thrust-rod connected to the forwardly-swinging arm of said lever and extending thence from and connected to said fender at a point remote from and in a different horizontal plane than the hinge-axis of the latter, said thrust-rod moving forward and rearward longitudinally of the body, and swinging the fender outward as the body falls, and pulling it inward as the body rises, and a guide for said rod.

5. In car-fenders and the like, the combination with a body subject to relatively great vertical movement, and a running-gear subject to relatively little vertical movement, of a lever of the first class having an arm swinging upwardly, and another arm swinging forwardly and fulcrumed intermediate of said arms to one of said parts, a positive connection between the other of said parts and the upwardly-swinging arm of said lever, swinging the latter with relative movements between said parts, a fender hinged to said body and having a front end swinging out and in on the axis of the hinge connection between the fender and body, and a thrust-rod connected to the forwardly-swinging arm of said lever and extending thence from and connected to said fender at a point remote from and in a different horizontal plane than the hinge-axis of the latter, said thrust-rod moving forward and rearward longitudinally of the body, and swinging the fender outward as the body falls, and pulling it inward as the body rises, and a separable connection between the fender and thrust-rod and a support for the latter.

6. In car-fenders and the like, the combination with a body subject to relatively great vertical movement, and a running-gear subject to relatively little vertical movement, of a lever of the first class, having an arm swinging upwardly, and another arm swinging forwardly, and fulcrumed intermediate of said arms to one of said parts, an adjustable positive connection between the other of said parts and the upwardly-swinging arm of said lever, swinging the latter with relative movements between said parts, a fender hinged to said body and having a front end swinging out and in on the axis of the hinge connection between the fender and body, and a thrust-

rod connected to the forwardly-swinging arm of said lever and extending thence from and connected to said fender at a point below the hinge-axis of the latter, said thrust-rod moving forward and rearward longitudinally of the body, and swinging the fender outward as the body falls, and pulling it inward as the body rises.

7. In car-fenders, a thrust-rod for operating a fender having reciprocating and transverse movements, in combination with a guide adapted to be fixed to a car-body and having a vertically-elongated socket for holding and guiding said rod intermediate of its ends.

8. For car-fenders and the like, levers for operating a fender by the vertical movement of a car-body, in combination with separate and oppositely-inclined connections for operating said levers similarly with the vertical movements of the car-body, and differentially with the lateral movements of a car-truck, substantially as set forth.

9. In car-fenders and the like, the combination with a body subject to relatively great vertical movement, and a running-gear subject to relatively little vertical movement, of two independent levers of the first class each having an arm swinging upwardly and another arm swinging forwardly, and each fulcrumed intermediate of said arms to one of said parts, positive connections between the other of said parts and the upwardly-swinging arms of said levers, swinging the latter with relative movements between said parts, a fender hinged to said body and having a front end swinging out and in on the axis of the hinged connection between the fender and body, and a thrust-rod for each of said levers connected to its forwardly-swinging arm and extending thence from and connected to said fender at a point remote from and in a different horizontal plane than the hinged axis of the latter, said thrust-rods moving forward and rearward longitudinally of the body.

In witness whereof we have hereunto signed our names in the presence of two subscribing witnesses.

GEORGE H. FRASER.
JAS. N. WEIKLY.

Witnesses:

FRED WHITE,
THOMAS F. WALLACE.