

(No Model.)

4 Sheets—Sheet 1.

A. B. HITCHCOCK & C. S. GOODING.
FENDER OR LIFE GUARD FOR RAILWAY CARS.

No. 453,258.

Patented June 2, 1891.

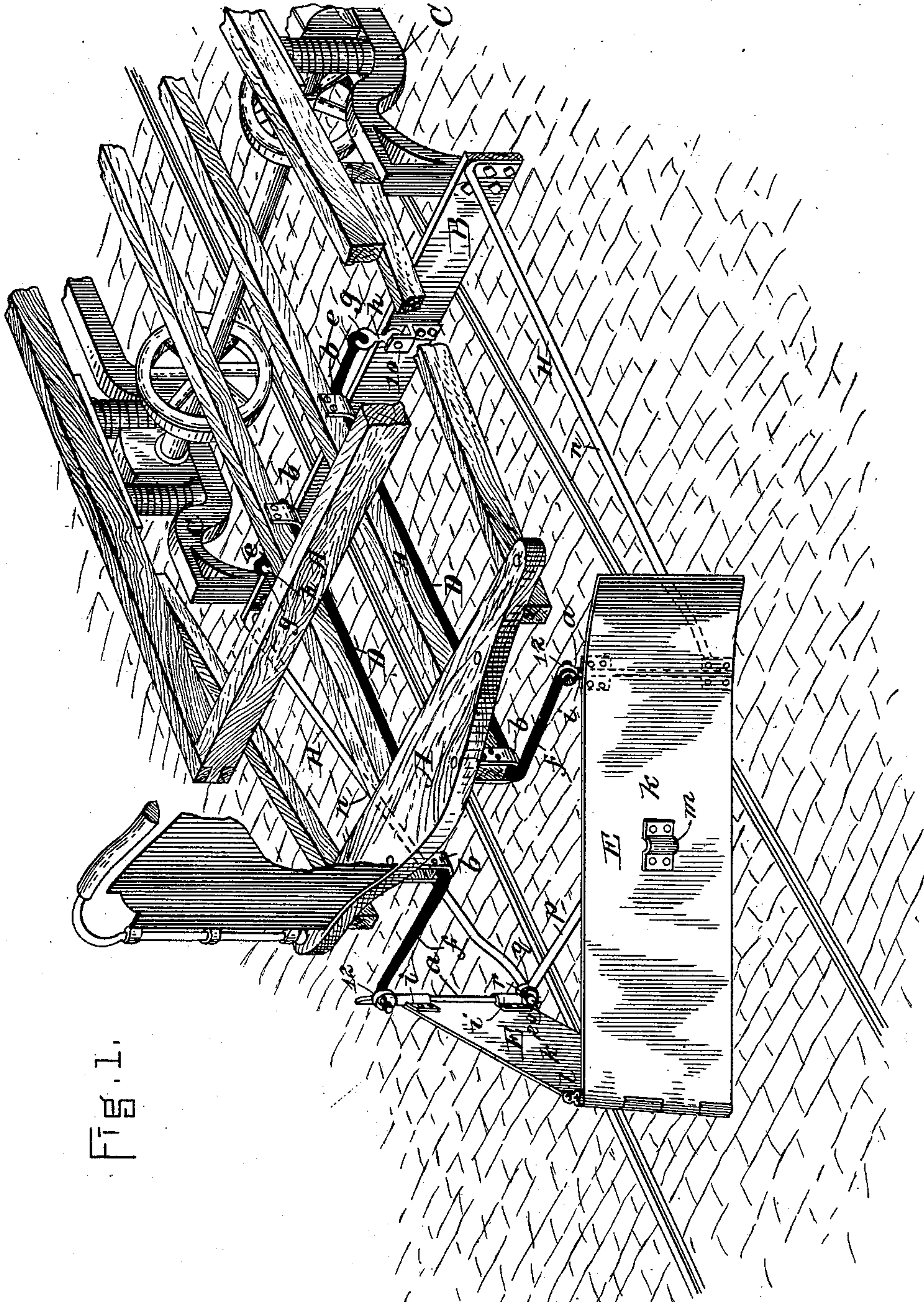


FIG. 1.

WITNESSES.

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By J. E. Schenck

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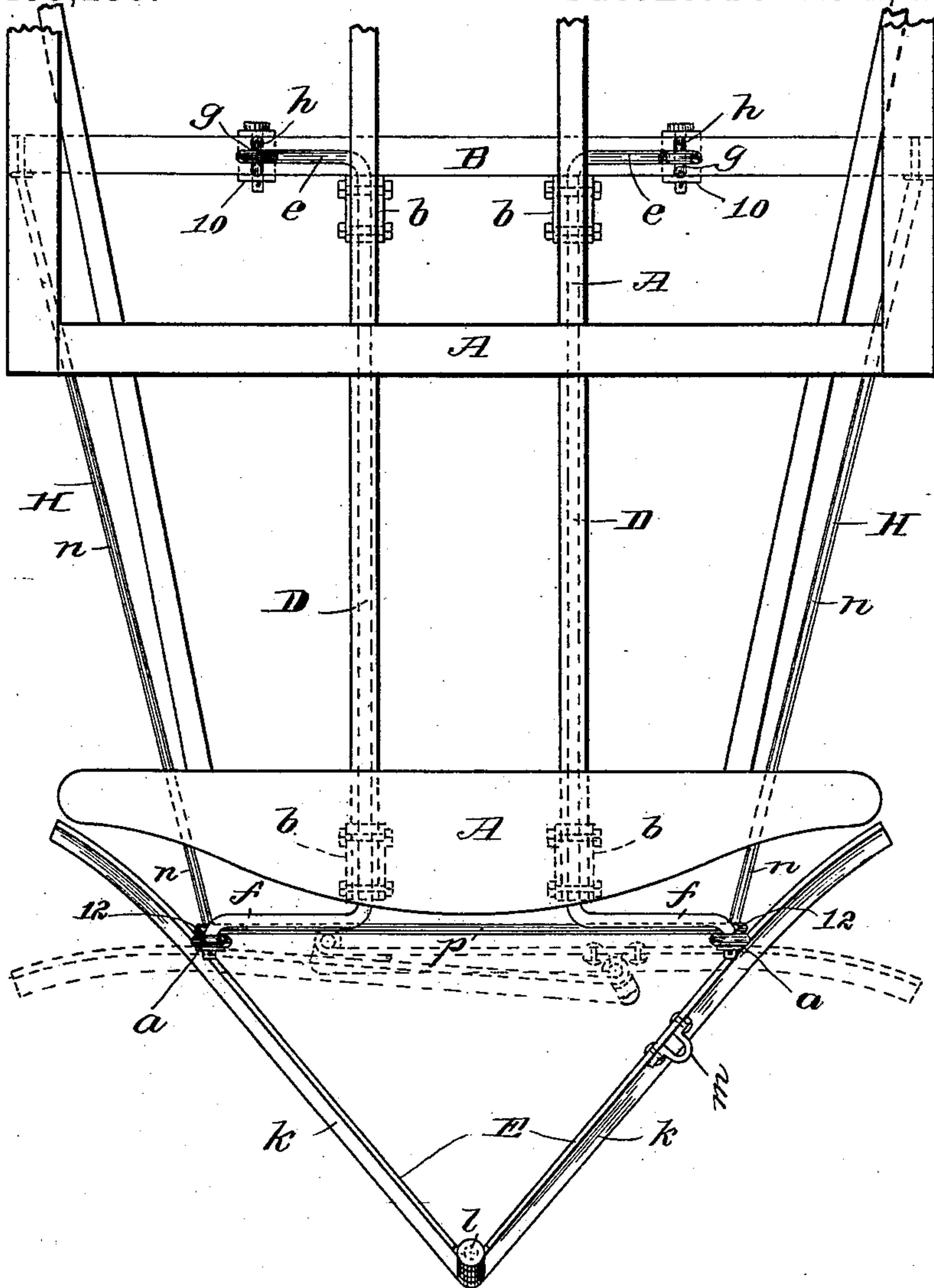


Fig. 2.

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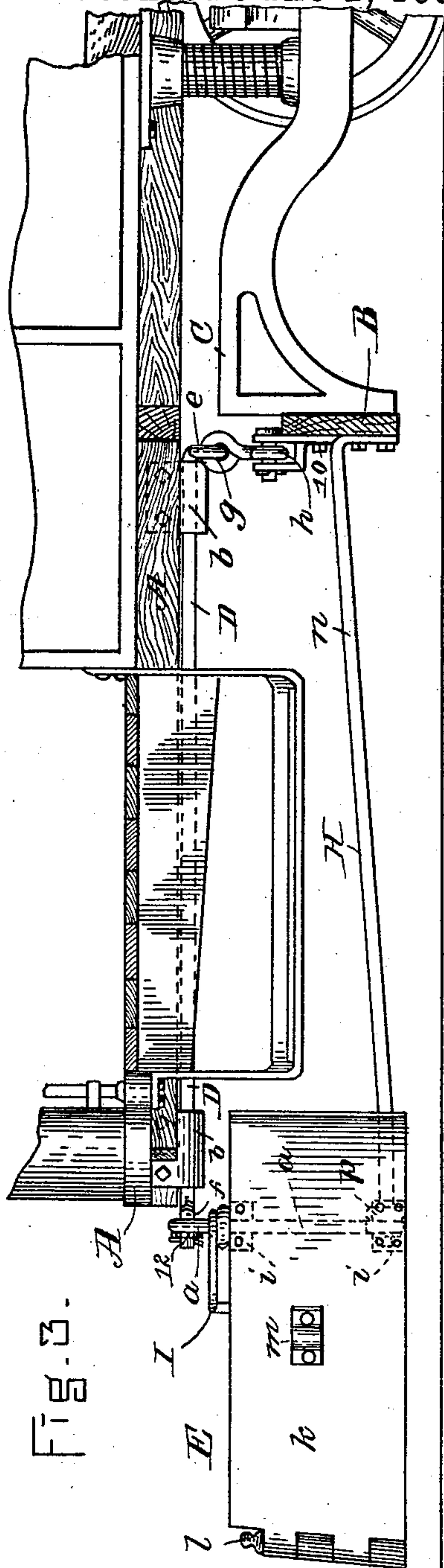
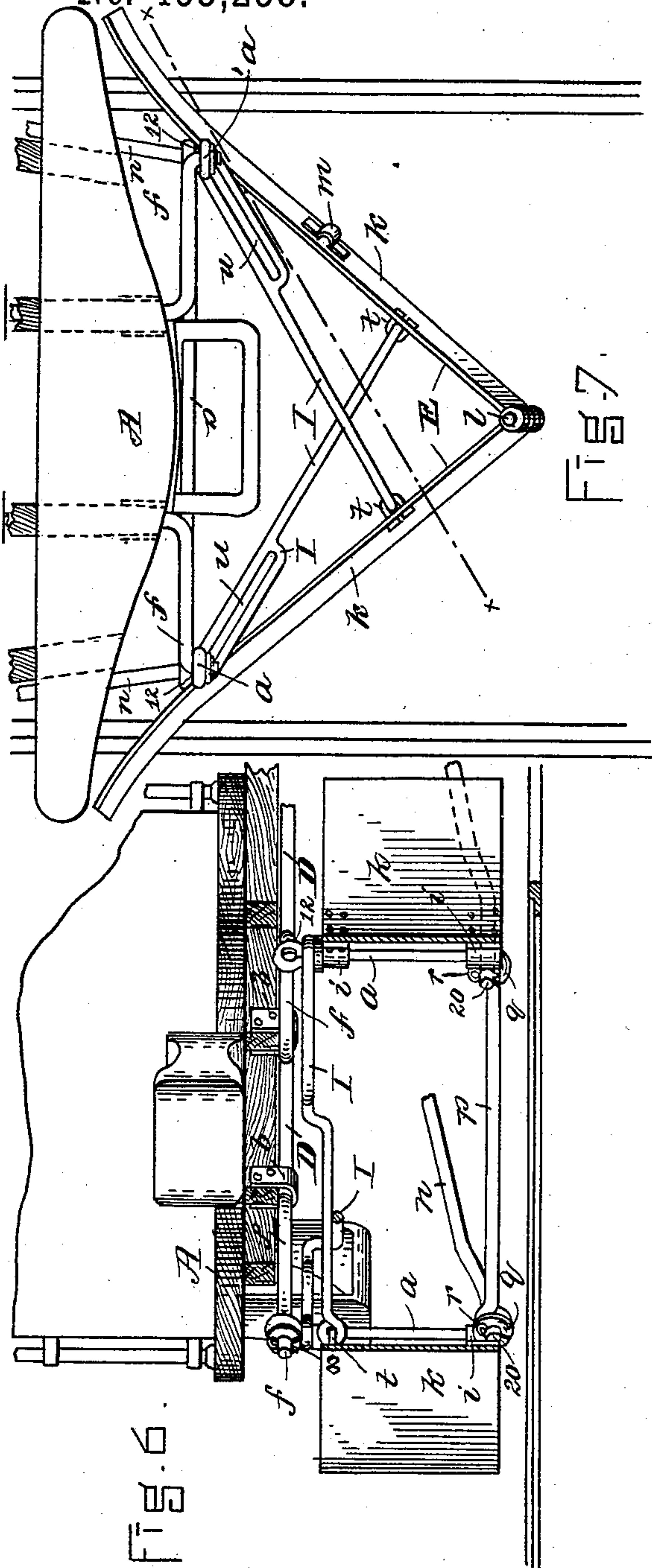
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Fig. 4.

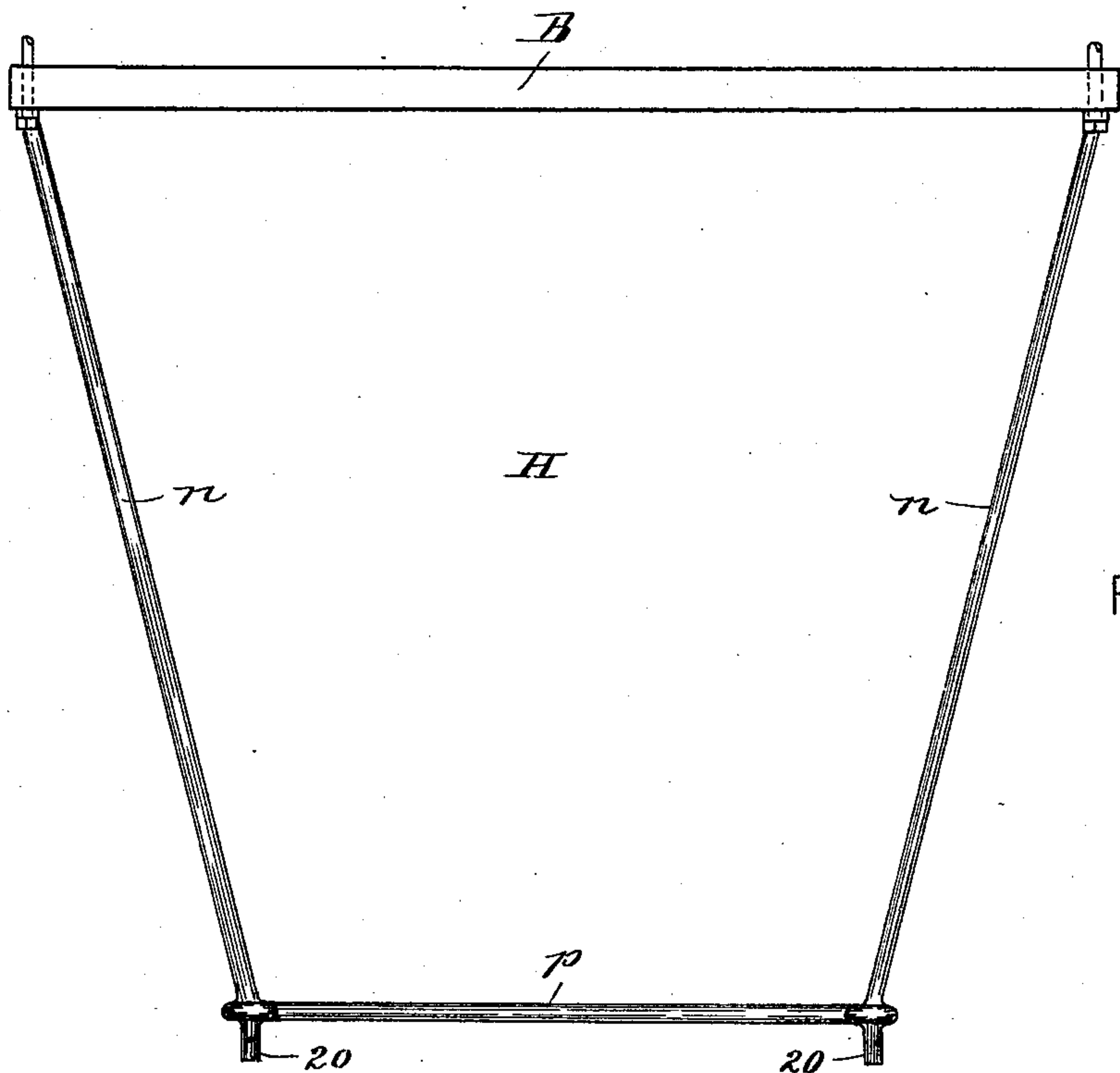
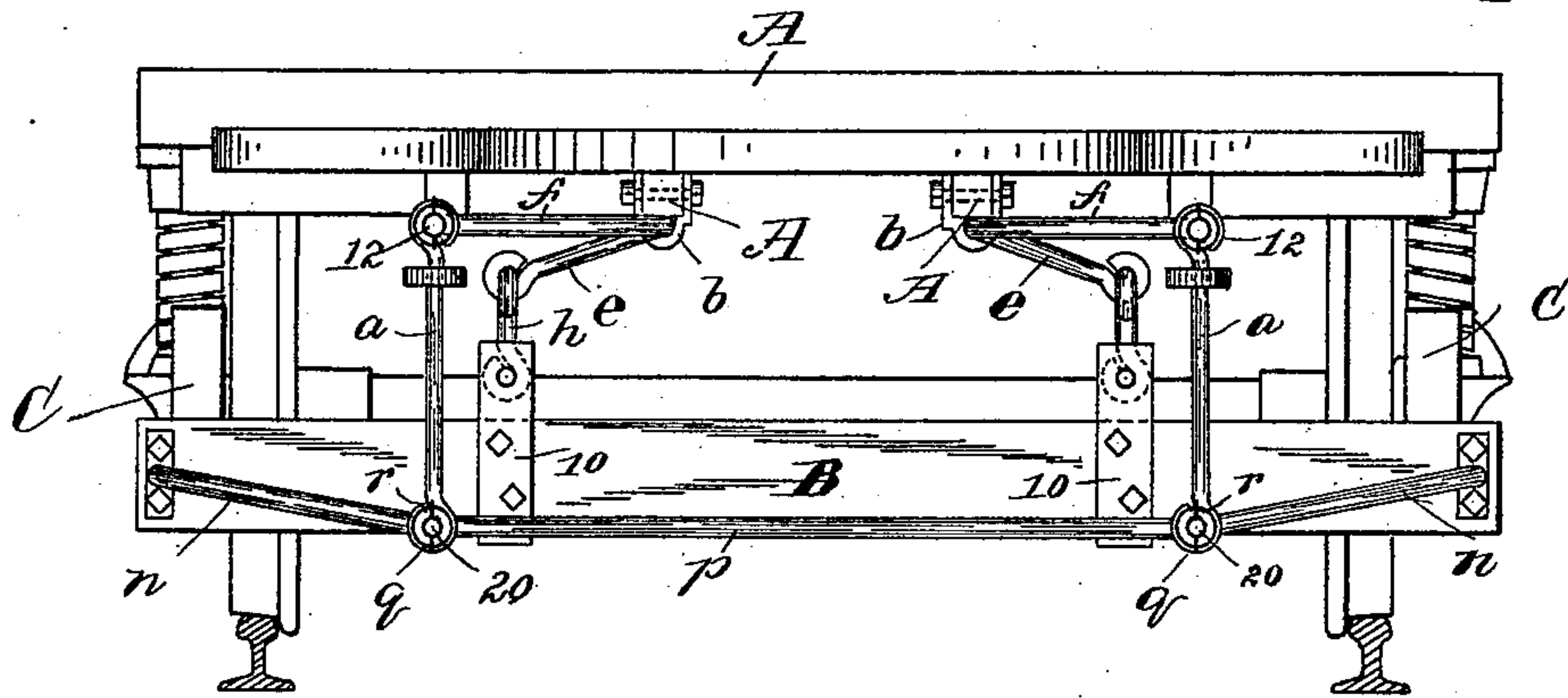


Fig. 5.

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UNITED STATES PATENT OFFICE.

ARTHUR B. HITCHCOCK AND CHARLES S. GOODING, OF BROOKLINE, ASSIGN-
ORS TO SAID HITCHCOCK, AND WILLIAM W. WHITMARSH, OF BOSTON,
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FENDER OR LIFE-GUARD FOR RAILWAY-CARS.

SPECIFICATION forming part of Letters Patent No. 453,258, dated June 2, 1891.

Application filed January 13, 1891. Serial No. 377,662. (No model.)

To all whom it may concern:

Be it known that we, ARTHUR B. HITCH-
COCK and CHARLES S. GOODING, citizens of
the United States, both residing at Brookline,
5 in the county of Norfolk and State of Massa-
chusetts, have invented certain Improvements
in Fenders or Life-Guards for Railway-Cars,
of which the following is a full, clear, and ex-
act description, reference being had to the
10 accompanying drawings, making part of this
specification, in which—

Figure 1 is a perspective view of one end
of the body or frame of a street-railway car
having our improved fender or life-guard ap-
15 plied thereto, the boarding of the platform
being removed to show the parts beneath.
Fig. 2 is a plan of the same. Fig. 3 is a side
elevation of the same. Fig. 4 is a front ele-
vation of a portion of the car body or frame,
20 the fender being removed to show its sup-
porting mechanism. Fig. 5 is a plan of the
stiffening frame or brace for the fender. Fig.
6 is a vertical section on the line $x x$ of Fig.
7. Fig. 7 is a plan of the fender provided
25 with additional rods forming an inside guard
over the space inclosed within the sides of
the fender.

Our invention relates to fenders or life-
guards for railway-cars, and has for its ob-
30 ject to so attach the fender to the car that it
will be constantly maintained at a uniform
distance from the ground, while the body of
the car will be free to rock or tilt longitudi-
nally without imparting any motion to said
35 fender.

To this end our invention consists in a
fender supported by longitudinal rock-shafts
having their bearings on the under side of the
car-body, said shafts being provided at their
40 outer ends with crank-arms connected with
the fender, and at their inner ends with simi-
lar arms connected with a portion of the truck
having no vertical motion, whereby, while the
fender is constantly maintained at a uniform
45 distance from the ground, the body of the car
will be free to rock or oscillate in the direc-
tion of its length independently of said fender,
as hereinafter set forth.

Our invention also consists in certain novel
50 combinations of parts and details of con-

struction, as hereinafter set forth and specifi-
cally claimed.

In the said drawings, A represents the front
portion of the body or frame of a railway-car.

B denotes a transverse bar, which is rigidly 55
secured to and forms a part of the car-truck
C, Figs. 1 and 3, which has no vertical mo-
tion, and consequently the said bar will re-
main constantly at a uniform distance from
the ground independently of the longitudi- 60
nal rocking motion of the car-body on its
springs. This bar B in electric cars is ar-
ranged near the ground in front of the motor,
and is termed the "motor-guard."

In suitable bearings $b b$, secured to the 65
under side of the frame A are hung two
longitudinal rock-shafts D D, each provided
at their opposite ends with crank-arms $e f$.
The inner crank-arms $e e$ are each jointed
at g to a short vertical rod or link h , which 70
is securely pivoted or fastened at its lower
end to some portion of the car-truck, in the
present instance to a plate 10, bolted to the
bar B, while the outer crank-arms $f f$ are each
jointed at 12 to a short vertical rod a , secured 75
to the inner side of the fender or life-guard
E by means of straps i , the fender being thus
supported by the said arms and rods, with
its lower edge quite close to the ground, as
seen in Figs. 1 and 3. 80

The fender E consists of two plates or side
pieces $k k$, preferably formed of metal, ar-
ranged in V form and hinged together at the
front end or vertex by means of a vertical
pin l , which is made removable in order to 85
allow the plates $k k$ to be lapped or folded
one upon the other out of the way, as seen in
dotted lines in Fig. 2, when the fender is not
required for use—as, for instance, when the
car is to be stored away in the car-house, 90
where it is desired to economize space by plac-
ing the cars as near together as possible, or
when two cars are to be coupled together.
When in this position, the two plates $k k$ can
be locked together by passing the pin l 95
through the sockets or apertures at the end
of the left-hand plate k , and also through a
staple or eye m , projecting from the outside
of the right-hand plate k , near the center of
its length, said staple being in the position 100

to receive the pin when the two plates are folded together, as shown. The plates *k k*, when disconnected by the withdrawal of the pin *l*, are free to swing in a horizontal plane upon their vertical supporting-rods *a*, as is necessary to permit of their being folded upon each other, as shown.

As the fender is secured to and supported by the outer crank-arms *f f* of the shafts *D D*, which are provided at their inner ends with crank-arms *e e*, rigidly connected with the bar *B* or other portion of the car-truck which has no vertical motion, it will be obvious that the fender *E* will always be maintained at a fixed or unvarying distance from the ground, as it will be impossible for the outer ends of the crank-arms to be raised or lowered so long as they remain connected with the stationary bar *B* or other portion of the car-truck which has no vertical motion. The car-body, however, with the bearings *b b*, is free to rock or oscillate longitudinally, such motion causing the shafts *D D* to rise and fall and turn within their bearings *b b* without varying the distance of the outer ends of the crank-arms *e f* from the ground, and in this manner we are enabled to support the fender at all times close to and at the same distance from the ground independently of the longitudinal rocking or tilting motion of the car, a desideratum hitherto unattained. The variation in the amount of longitudinal rocking or tilting motion of the car-body at different distances from the center of its length is compensated for by making the outer crank-arms *f* proportionately longer than the inner crank-arms *e*, as seen in Figs. 1 and 4, thus equalizing the movement and preventing the parts from being subjected to strain.

As the crank-arms *f f* and shafts *D D* merely serve to support the fender *E*, it becomes necessary to provide means for stiffening the same to enable it to resist any longitudinal thrust produced by contact with a person or body on the track. Hence we employ a frame *H*. (Seen detached in Fig. 5.) This frame consists of two horizontally-arranged rods *n n*, suitably secured at their inner ends to the bar *B* and having their front ends connected by a horizontal transverse bar or rod *p*. The outer ends 20 of the rods *n n* pass through eyes *q* at the lower ends of the vertical fender-supporting rods *a a*, as seen in Figs. 1 and 4, where they are secured by pins *r*. These rods *n n* thus serve to stiffen and brace the fender against any force exerted in the direction of the length of the car, thus preventing the fender from becoming broken or injured by contact with a person or object upon the track.

In order to prevent a person upon the track with whom the fender might be brought into contact from being thrown over into the space inclosed by the side pieces *k k*, we preferably provide the fender with a guard extending over the top of this space from side

to side. One form of such guard or protector is shown in Fig. 7, the same consisting of two crossed rods *I I*, the front ends of which are hooked into eyes *t*, projecting from the inner sides of the plates *k k* at the upper edge, while their rear ends, which are provided with slots *u*, embrace and are held in place by the upper ends of the vertical rods *a*, the slots *u* permitting the movement of the side plates *k* of the fender when they are folded or lapped over each other, as before described.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. The combination, with a railway-car, of a fender or guard connected with the body of the car, and also with a portion of the truck having no vertical motion, through the medium of longitudinal rock-shafts provided with crank-arms at their opposite ends, the outer arms being connected with the fender and adapted to support the same, and the inner arms being connected with the said portion of the truck having no vertical motion, whereby the fender is maintained at a uniform distance from the ground independently of the longitudinal rocking or tilting motion of the car-body, substantially as set forth.

2. The combination, with a railway-car, of a fender or guard, two longitudinal rock-shafts having their bearings on the under side of the car-body and provided at their outer and inner ends with crank-arms, and jointed connections between the outer crank-arms and the fender and the inner crank-arms and a portion of the truck having no vertical motion, substantially as set forth.

3. The combination, with a railway-car, of a fender or guard, two longitudinal rock-shafts having their bearings on the under side of the car-body and provided at their outer and inner ends with crank-arms, jointed connections between the outer crank-arms and the fender, the inner crank-arms and a portion of the car-truck having no vertical motion, and a horizontal bracing-frame connected at its inner end with the car-truck and at its outer end with the fender and adapted to stiffen the same and resist any longitudinal thrust produced by the contact of the fender with a body or object upon the track, substantially as set forth.

4. The combination, with the fender jointed at its front end, as described, of guard-rods extending across the top of the space between its sides and having slots to permit of the folding together of the sides of the fender, substantially as set forth.

Witness our hands this 10th day of January, A. D. 1891.

ARTHUR B. HITCHCOCK.
CHAS. S. GOODING.

In presence of—

P. E. TESCHEMACHER,
GEO. H. CUSHMAN.