

(No Model.)

J. & H. R. HOWARD.  
BRAKE MECHANISM FOR CARS.

No. 474,451.

Patented May 10, 1892.

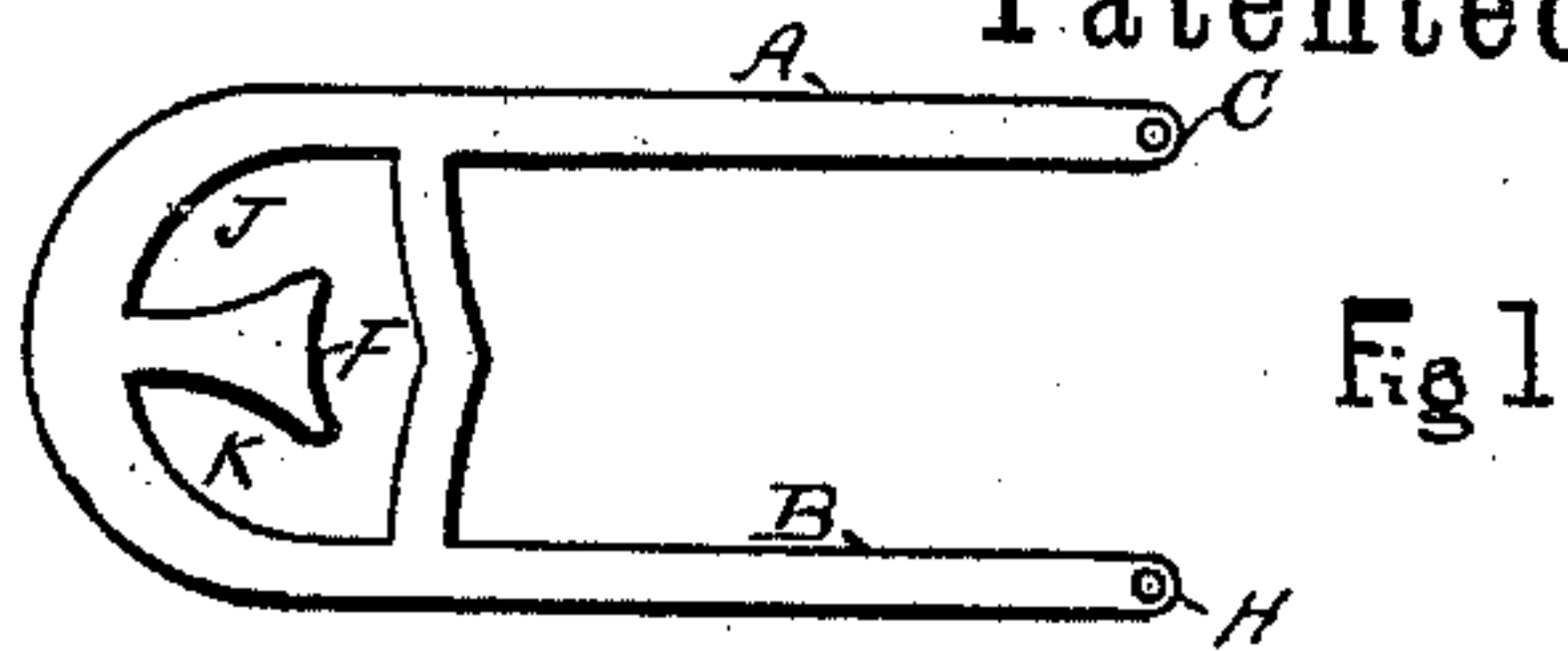


Fig 1

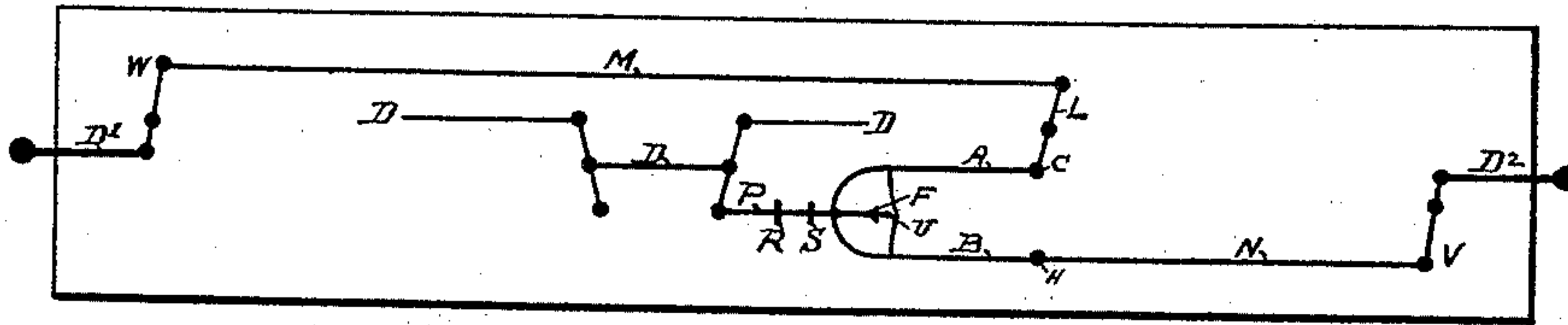


Fig 11

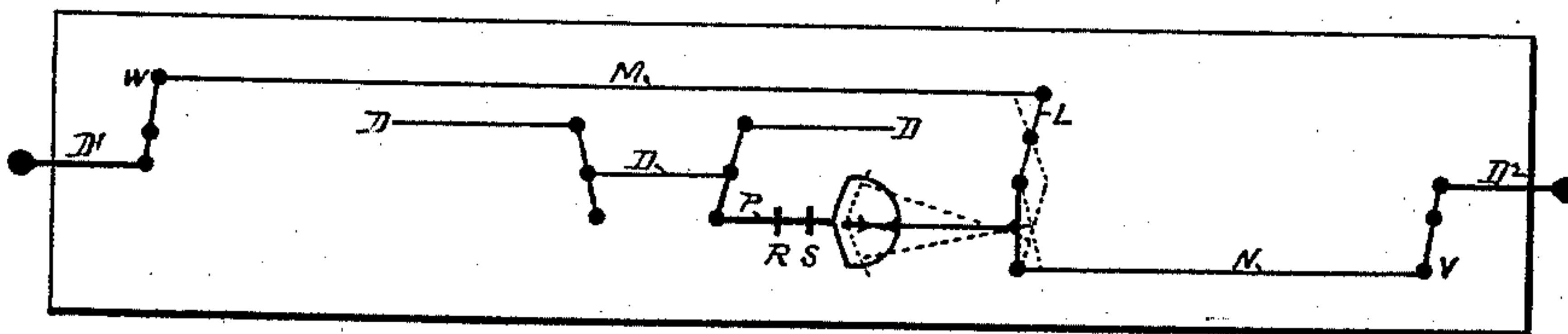


Fig 111



Fig IV



Fig V

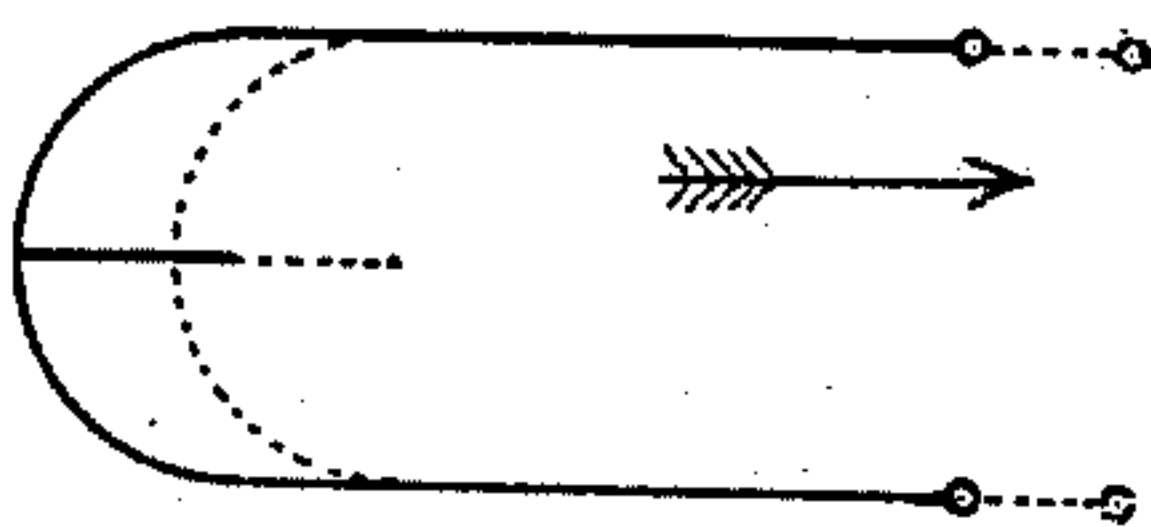


Fig VI

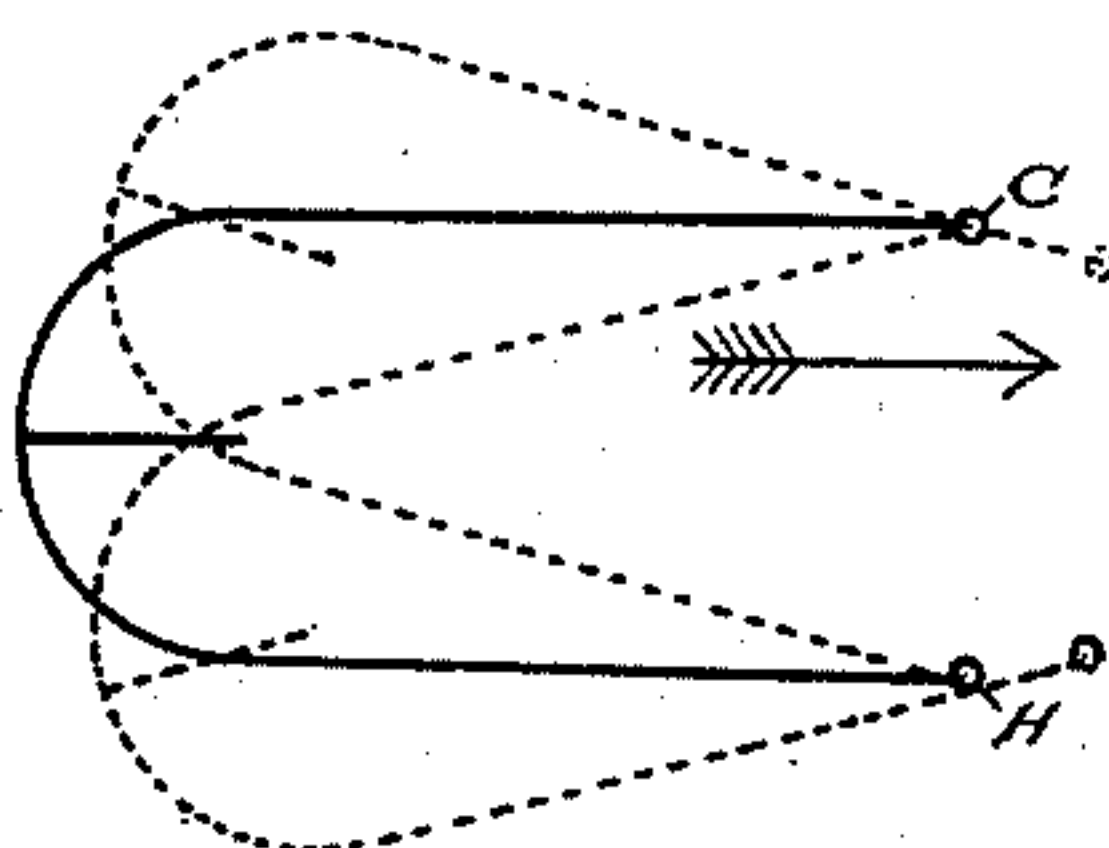


Fig VII

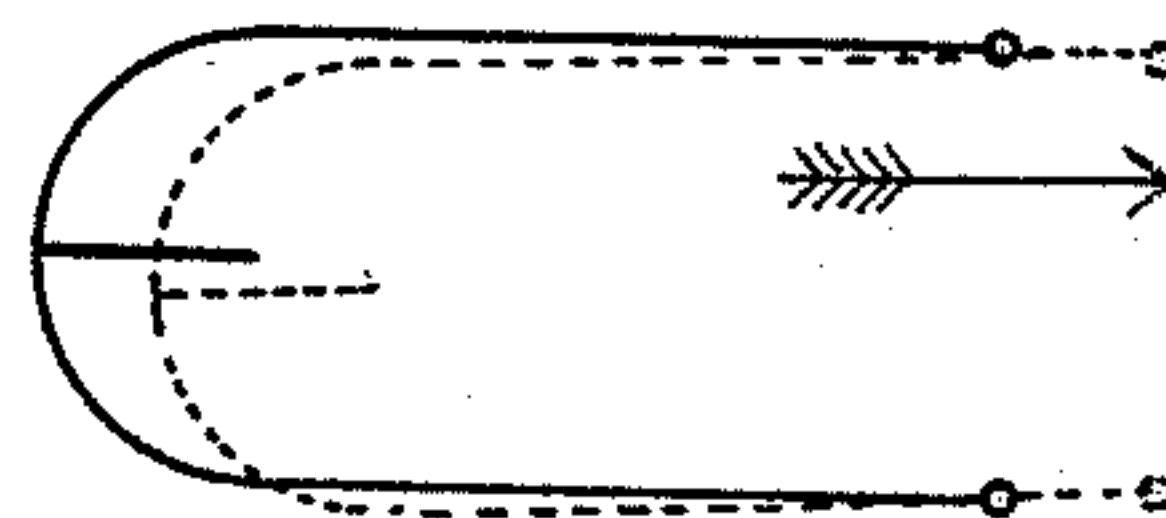


Fig VIII

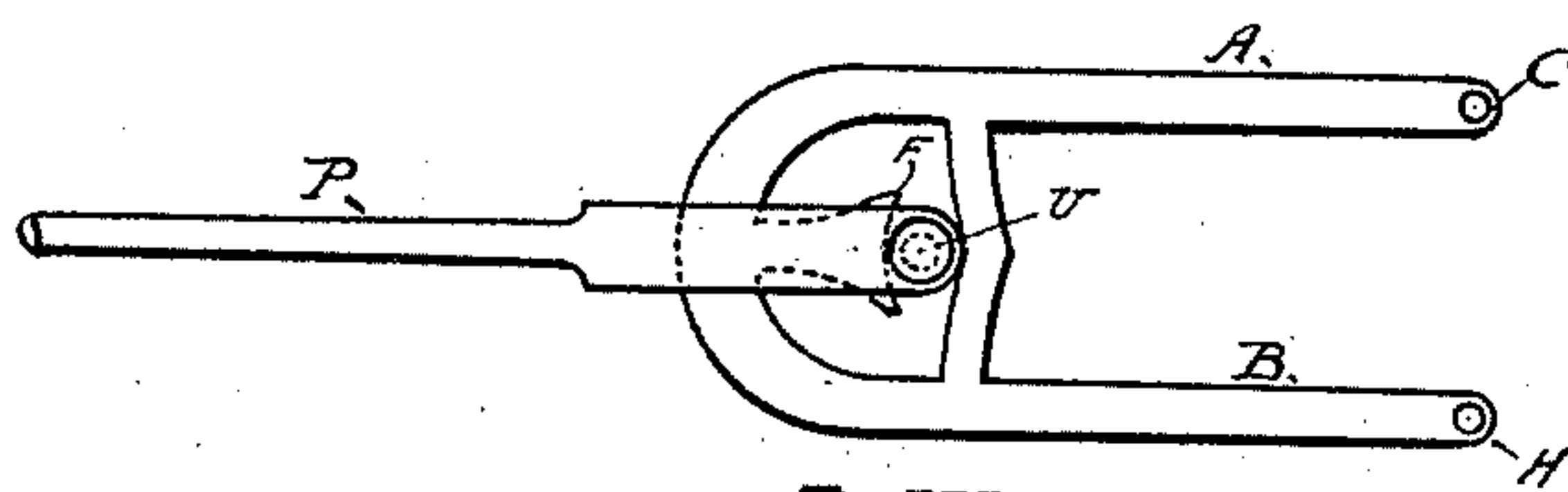


Fig IX

WITNESSES:

Ed. D. Miller.  
E. C. Gie.

INVENTORS

James Howard  
Herbert Russell Howard

# UNITED STATES PATENT OFFICE.

JAMES HOWARD AND HERBERT RUSSELL HOWARD, OF ENGLEWOOD, NEW JERSEY.

## BRAKE MECHANISM FOR CARS.

SPECIFICATION forming part of Letters Patent No. 474,451, dated May 10, 1892.

Application filed May 7, 1891. Serial No. 391,981. (No model.)

*To all whom it may concern:*

Be it known that we, JAMES HOWARD and HERBERT RUSSELL HOWARD, subjects of Her Majesty the Queen of Great Britain, and residing at Englewood, in the State of New Jersey, have invented new and useful Improvements in Power-Actuated Brake Mechanism for Railroad or Tram Cars, of which the following is a specification.

The power for operating this brake is derived from the inthrust of the draw-bar. It therefore belongs to that class of brakes called "momentum" or "buffer" brakes; but it differs from the ordinary momentum-brake, inasmuch as it is entirely free from any connection with the axles or running-gear of the car.

The merit of this invention lies in its simplicity and effectiveness. It is well known that when steam is shut off from a train in motion the cars "bunch" themselves against the engine and the draw-bars are then driven in simultaneously. It is only when steam is shut off that brakes are required. Therefore to utilize this simultaneous motion of the draw-bars we have invented a yoke and connected it by suitable means to the draw-bars. The yoke is so shaped and connected up under the body of the car that when one draw-bar is driven in before the other the yoke does not operate the brakes; but when both draw-bars are driven in together the motion of the yoke is such that the brakes are applied, and as brakes are never needed except when both draw-bars are driven in together, it follows that the motions of the yoke here described will cover all the conditions under which cars are operated when brakes are or are not required.

In the drawings herewith we do not confine ourselves to the exact shape or proportions given, but reserve the right to vary these as circumstances may require.

Figure I is a drawing of a yoke, showing the main features of its construction. Fig. II shows a yoke coupled up to the draw-heads and also the connection with the ordinary foundation-brake of a car. Fig. III shows a fixed yoke, combined with a pull-rod. Figs. IV and V show two views of end of pull-rod

that works on the yoke. Figs. VI, VII, and VIII are diagrammatic figures for illustration. Fig. IX shows a yoke connected with the main pull-rod.

In Fig. I, A and B are the arms of the yoke. C H are the ends where the pull-rods are attached. J K are spaces provided for the movement of the yoke over the pull-rod. F is the fulcrum upon which the brakes are pulled on. In the yoke the length of the arms A B, together with the width of the fulcrum F, control the amount of inthrust it is possible to give to one draw-bar before the yoke will pass out of connection with the pull-rod, so that brakes will not "go on" when the other draw-bar is compressed. For instance, if the arms of the yoke are long and the fulcrum narrow, then a slight inthrust of one draw-bar will immediately take the yoke out of connection with the pull-rod and brakes will not go on; but if the arms of the yoke are short and the fulcrum wide then a much greater inthrust of one draw-bar will be necessary to take the yoke out of connection with the pull-rod. Thus the amount of inthrust of either draw-bar and the operation of this inthrust upon the brakes may be controlled by variations in the length of the arm and the width of the fulcrum of the yoke.

In Fig. II the yoke is shown in position. The arm A is coupled up to an equalizer L and equalizer L is connected to the draw-bar by pull-rod M and lever W, which may derive its motion from any part of the draw-bar D' or from the movable gear of the draw-bar, preferably from the forward follower. (Not shown.) The other arm of the yoke B is coupled direct to the other draw-bar D<sup>2</sup> by means of pull-rod N and lever V, which may derive its motion from any part of the draw-bar or from the movable gear of the draw-bar, preferably from the forward follower. (Not shown.) The main brake-lever pull-rod P (yoke end shown in Figs. IV and V) is connected to the foundation brake-rigging D at T, its other end having a long jaw, (shown in Fig. V,) which carries a pin U, that works upon fulcrum F of the yoke. Two guide-brackets R and S are placed over the pull-rod P.

Fig. IV is a plan view of the end of main



brake-lever pull-rod P. Fig. V is a side view of the same, showing long jaw for passing over the yoke; also, the pin U, which works upon fulcrum F of the yoke.

5 It is manifest that the construction may be reversed. Instead of making a movable yoke a fixed yoke may be made with the curves reversed and placed upon the end of the main brake-lever pull-rod, and a movable arm with  
10 a jaw may be extended from an equalizer, which may be made to perform the same movements as the yoke. This method is shown in Fig. 3, and we claim the right to use either arrangement, as may be found most  
15 convenient.

In describing the operation of the yoke it will facilitate an understanding of its motions if the Diagrams 6, 7, and 8 are referred to at the same time with Fig. 2. On refer-  
20 ence to Fig. 2 it will be seen that the inthrust of the draw-bars D' and D<sup>2</sup> would operate levers W and V in such a way as to exert a pull upon the pull-rods M and N, so that if both draw-bars were driven in together the  
25 yoke would assume the position shown in dotted lines in Diagram 6. The whole yoke would have moved forward in direction of the arrow, and consequently brakes would be applied, because the pin U in the jaw of the  
30 main lever pull-rod P (see enlarged view, Fig. IX) is brought into contact with the fulcrum F of the yoke. The pull-rod P is thereby carried forward with the yoke and, being attached, also, to the main brake-lever at its other end,  
35 it would pull the "brakes on." Diagram 7 shows in dotted lines the position the yoke would assume if either draw-bar were driven in before the other. Thus if the arm H is pulled then C becomes the center of move-  
40 ment of the yoke, and it passes out of connection with the main pull-rod jaw-pin U. In like manner if arm C is pulled then H becomes the center of movement of the yoke, and it again passes out of connection with  
45 the main pull-rod jaw-pin U. It will thus be seen that when one draw-bar is driven in before the other the yoke is immediately thrown to one side, and if while in this position the other draw-bar is compressed then  
50 the yoke assumes the position shown in dotted lines in Diagram 8, and there is no action upon the brakes. Upon the extension of the draw-bar springs after compression the yoke returns to its original position.

55 Having thus described our invention, what

we claim as new, and for which we desire Letters Patent, is—

1. In combination with the foundation-brakes and brake-rigging of a car, the yoke, substantially as described and shown, in op- 60  
erative relation to the pull-rod of the brake-rigging, and draft-rigging, substantially as described, for effecting the automatic engage-  
ment of said yoke and rod when both draw- 65  
bars are driven in together and the automatic non-engagement of said parts when one draw-  
bar is driven in before the other, substantially  
as and for the purposes set forth.

2. In combination with the foundation-brakes of a car, the movable yoke, substan- 70  
tially as described, and connecting pull-rods coupling said yoke with the draw-bars and brake-rigging, the adjustment being such that  
when both draw-bars are driven in simulta- 75  
neously, or substantially so, such yoke will automatically effect an engagement of the  
brakes and that when one draw-bar is driven  
in before the other said yoke will automati-  
cally effect a disengagement of the brakes,  
substantially as set forth. 80

3. In combination with the foundation-brakes of a car, a yoke, substantially as de-  
scribed, and the pull-rod connections coupling  
said yoke with the brake-rigging and forward 85  
followers of the draw-bar gear, the adjustment being such that when both draw-bars are  
driven in simultaneously, or substantially so,  
the yoke will automatically effect an engage-  
ment of the brakes and that when one draw- 90  
bar is driven in before the other said yoke will automatically effect a disengagement of  
the brakes, substantially as set forth.

4. In combination with the foundation-brakes and brake-rigging of a car, the yoke, 95  
substantially as described, carried by the pull-rod of the brake-rigging, the movable arm  
connected with the draft-rigging to engage  
said yoke, and the pull-rod connections inter-  
mediate said movable arm and the draw-bars  
of the car, substantially as and for the pur- 100  
poses described.

Signed at New York, in the county of New York and State of New York, this 28th day of April, A. D. 1891.

JAMES HOWARD.

HERBERT RUSSELL HOWARD.

Witnesses:

CHAS. C. GILL,

ED. D. MILLER.