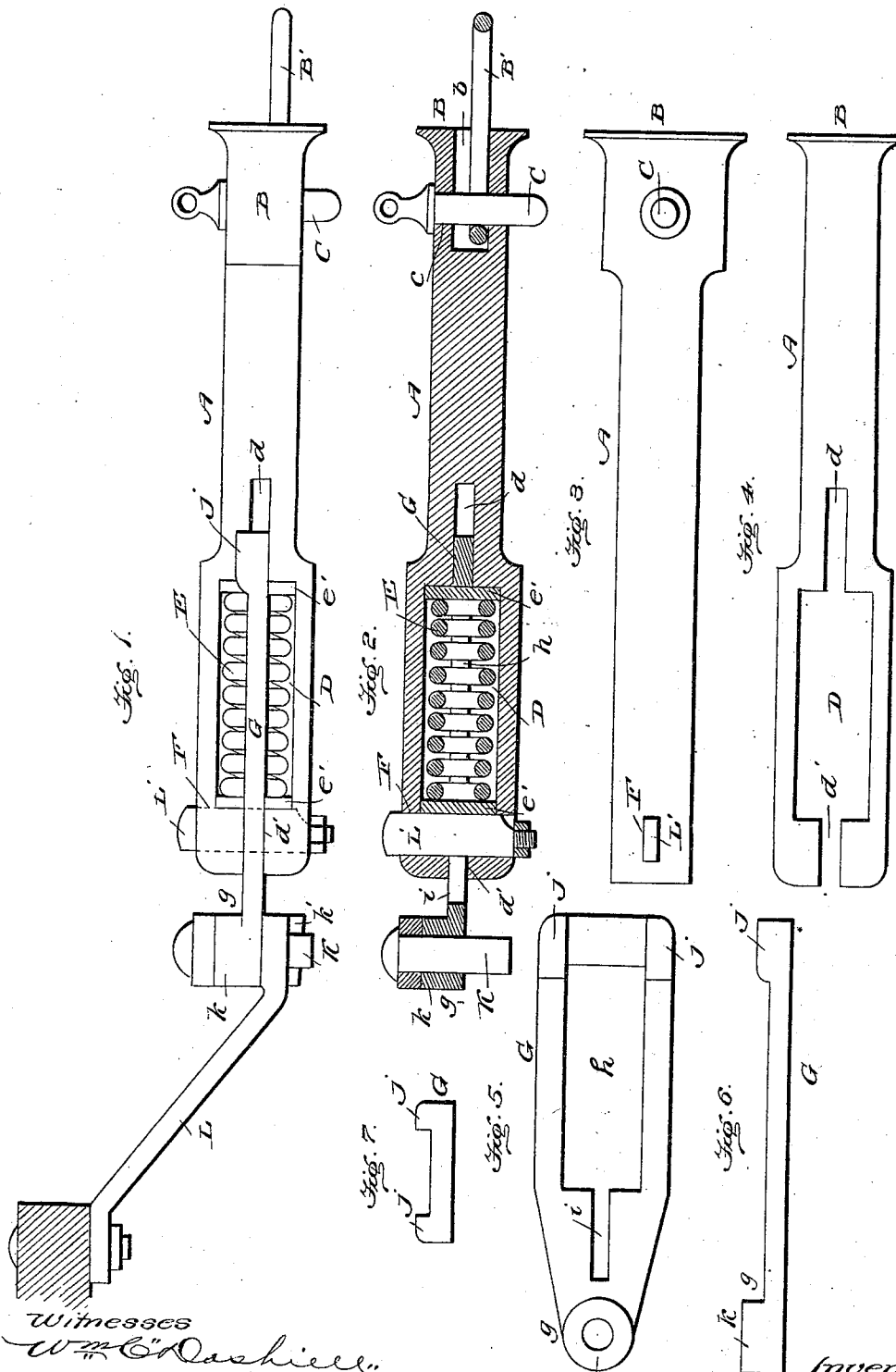


(No Model.)

J. H. & G. L. VOGAN.  
DRAW BAR FOR CARS.

No. 512,925.

Patented Jan. 16, 1894.



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# UNITED STATES PATENT OFFICE.

JOHN H. VOGAN AND GEORGE L. VOGAN, OF NEW CASTLE, PENNSYLVANIA.

## DRAW-BAR FOR CARS.

**SPECIFICATION** forming part of Letters Patent No. 512,925, dated January 16, 1894.

Application filed June 17, 1893. Serial No. 477,995. (No model.)

*To all whom it may concern:*

Be it known that we, JOHN H. VOGAN and GEORGE L. VOGAN, citizens of the United States, residing at New Castle, in the county of Lawrence and State of Pennsylvania, have  
5 invented certain new and useful Improvements in Draw-Bars and Springs; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as  
10 will enable others skilled in the art to which it appertains to make and use the same.

Our invention relates to improvements in draw-bars and springs of that class which are pivotally connected with the body of a car to  
15 have a radial movement; and the objects of our improvement are, first, to so construct the draw bar that it is adapted to contain within itself the cushion and to secure a direct draft or pull at all times on the cushion when passing  
20 around a curve as well as on a straight portion of the track; secondly, to so construct the draw bar that it can be made shorter than the bars usually employed, which is especially advantageous as it enables the car to  
25 take a shorter curve, and finally the draw-bar is simple and durable in construction and not liable to get out of order as the parts are so connected together that bolts and nuts, and rivets, are dispensed with.

In the construction of the ordinary draw bar, especially designed for service on street railways, it has been the common practice to employ a cushion spring between the heel or pivoted end of the draw bar and the car-frame,  
35 but this arrangement of the cushion spring relatively to the draw bar is objectionable for the reason that when the car passes around a curve in the track, a sidewise strain is brought on the spring. We obviate this objection by constructing the draw-bar in sections  
40 formed to contain or receive between themselves a cushion that lies between the draw-head and pivotal connection of the draw-bar with the car-frame, whereby a direct pull  
45 or strain is brought on the cushion at all times both when passing around a curve in the track or on a level straight part of the track. The draw bar, proper, is provided  
50 near its rear end with a longitudinal chamber and with two longitudinal slots on opposite sides of the chamber and communicating therewith, and to this rear end of the draw

bar is connected the pivotal link in a manner to admit of the draw bar having a limited longitudinal movement to compress the cushion  
55 fitted in the chamber of said draw bar. The link which serves as the means for pivotally connecting the radially movable draw-bar to the car-frame, is constructed to fit in the longitudinal slots of the draw-bar, to accommodate the cushion, and to form a guide way for the endwise movement of the draw-bar, whereby lateral displacement of the draw-bar is prevented on the pivotal link but at the same  
60 time the draw bar is free to have the necessary endwise play to compress the cushion and to relax the latter when the strain is taken off the draw-bar by the car coming at rest.

The invention further consists in the details of construction and arrangement of parts as will be hereinafter more fully described and particularly pointed out in the claims.

In the accompanying drawings, forming a part of this specification, we have illustrated the preferred embodiment of our invention,  
75 and in which—

Figure 1 is a side elevation showing the draw-bar pivotally connected with the car-frame or body. Fig. 2 is a longitudinal sectional view. Figs. 3 and 4 are, respectively,  
80 a top and a side view of the draw-bar detached from the other parts. Figs. 5, 6, and 7, are respectively a top plan view, a side elevation, and an end view of the pivotal link.

Like letters of reference denote corresponding parts in all the figures of the drawings, referring to which—

A designates the draw bar, proper, which is provided at its front end with a draw head B.  
90 In the drawings, we have shown the draw-head provided with a chamber *b* to receive the link B' and with a vertical aperture or passage *c* to receive the usual gravity pin C, the coupling shown being of the class known  
95 as the "pin and link coupling;" but it will be understood that we do not confine ourselves to this particular form of coupling as we may use in lieu thereof any of the well known styles of coupling.

At the rear end of the draw-bar A, we provide the longitudinal chamber D designed to receive the cushion E, and this draw-bar is further provided with the vertical key-pas-  
100

sage or slot F and with the longitudinal recesses or slots  $d, d'$ . These longitudinal slots are formed in the draw bar on opposite sides of the cushion chamber D, and they are arranged in the same horizontal line or plane to receive the pivotal link G. This link G is preferably made in the rectangular form shown in Fig. 5 of the drawings, with the tapered or reduced rear end  $g$ , and said link is formed with the longitudinal rectangular slot or opening  $h$  and with the reduced slot  $i$  between the opening  $h$  and the rear extremity of the reduced part  $g$  of the link. At its front end, the link is formed with the raised flanges  $j, j$ , which lie on opposite sides of the link and are so spaced or arranged to form a longitudinal guide way in which the draw bar is fitted. The link G is placed in the slots  $d, d'$ , of the draw-bar, its forward end fitting in the slot  $d$ , and the slot  $i$  therein being in line with the rear slot  $d'$  in said draw-bar, while the opening  $h$  in the link aligns with the chamber D of the draw-bar so that it will accommodate the cushion E which is contained within the chamber D of the draw-bar and the opening  $h$  of the link. The reduced rear end  $g$  of the link is formed with a raised boss  $k$  through which is pierced the vertical aperture for the pivot K of the draw-bar.

In the drawings, we have shown the link G pivoted between two cross bars and by a vertical bolt  $k$  which has a transverse key  $k'$  passed through its lower end. These cross bars are rigidly fastened in place and to a suitable arm or bracket L, attached to the car frame or body; but we do not restrict ourselves to this particular way of pivotally supporting the draw-bar on the frame of the car or on its body as we are aware that the draw-bar can be pivotally fastened in place in any suitable way other than the manner herein shown and described.

The cushion E, may consist of the coiled spring shown in Figs. 1 and 2 of the drawings, or it may consist of a block of rubber or equivalent yielding material; hence we do not strictly limit ourselves to any particular form of the cushion. In the preferred embodiment of the invention, we use the coiled spring shown, which bears against the follower plates  $e', e'$ , fitted in the chamber D and at the extremities of the spring to afford firm bearings for the spring, one of the plates  $e'$  bearing against one end wall of the chamber D in the draw bar and the other follower plate being arranged to bear against the solid front end of the slotted link G. A vertical key L' passes through the vertical key passage or way F at the rear end of the draw bar and through the slot  $i, i$ , in the reduced rear end of the link, the lower end of said key bolt provided with a nut which is screwed up to bear against the draw-bar. It will be noted that the flanges at the front end of the link G engage with or bear against the sides of the draw-bar, and that the vertical key-bolt passes through the slot in the link and

is fixed in the draw bar so that the link and draw-bar are securely connected together but at the same time the draw-bar is free to have the desired longitudinal movement to compress the cushion when strain or pull is exerted on the draw-bar or to relax the cushion when the pull is released and the cushion reacts, through its inherent elasticity, to restore the parts to their normal positions. The lateral displacement of the draw-bar on the pivoted link G is prevented by the flanges on the link engaging with the sides of the draw bar and by the fixed key-bolt L fitting in the slot of the link.

The operation of the invention will be readily understood, but it may, be remarked that by constructing the draw-bar to contain the cushion between the coupling head and the pivotal point of the draw bar we secure direct strain or pull on the cushion at all times and obviate the objectionable side strain on the cushion when rounding a curve, and, further, a shorter draw-bar can be used to give a greater radius of movement to the draw-bar and pass around a shorter curve.

The improved draw-bar is quite simple and cheap of construction, and it is durable, as there are no bolts or rivets to become loose and lost.

We are aware that changes in the form and proportion of parts and details of construction of the devices herein shown and described as an embodiment of our invention can be made without departing from the spirit or sacrificing the advantages thereof, and we therefore reserve the right to make such changes and alterations as fairly fall within the scope of the same.

Having thus fully described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. A radially-movable draw-bar constructed with a cushion-chamber and link-receiving slots at its rear end, a pivotal link fitted in said slots of the draw-bar and provided with guide-ways between which the draw-bar is free to move longitudinally but restrained against lateral play, and a cushion spring fitted in the chamber of the draw-bar to bear at its opposite ends against the link and draw-bar and confined by the link against displacement from said chamber, substantially as and for the purposes described.

2. A radially movable draw-bar provided with a longitudinal cushion chamber near its rear end and with aligned slots, combined with an open link pivoted at its rear end and fitted in the slotted part of the draw-bar, and a cushion fitted in the open link and the chamber of the draw-bar, substantially as and for the purposes described.

3. A radially-movable draw-bar provided with a cushion chamber near its rear end, combined with the open link having the longitudinal slot and the guide flanges between which the draw-bar is guided, the key-bolt fixed in the draw-bar and fitted in the slot of

the link, and the cushion confined in the link and draw-bar chamber, as and for the purposes described.

5 4. A radially movable draw-bar having the aligned slots on opposite sides of the chamber therein, in combination with an open slotted link fitted in the slotted part of the draw-bar and provided with the guide flanges between which the draw-bar is fitted, the bolt  
10 fixed in the draw-bar and fitting in the slot

of the link, and the cushion with followers confined between the draw-bar and the link, as and for the purposes described.

In testimony whereof we affix our signatures in presence of two witnesses.

JOHN H. VOGAN.

GEORGE L. VOGAN.

Witnesses:

M. W. LESLIE,

ROBERT M. HAINER.