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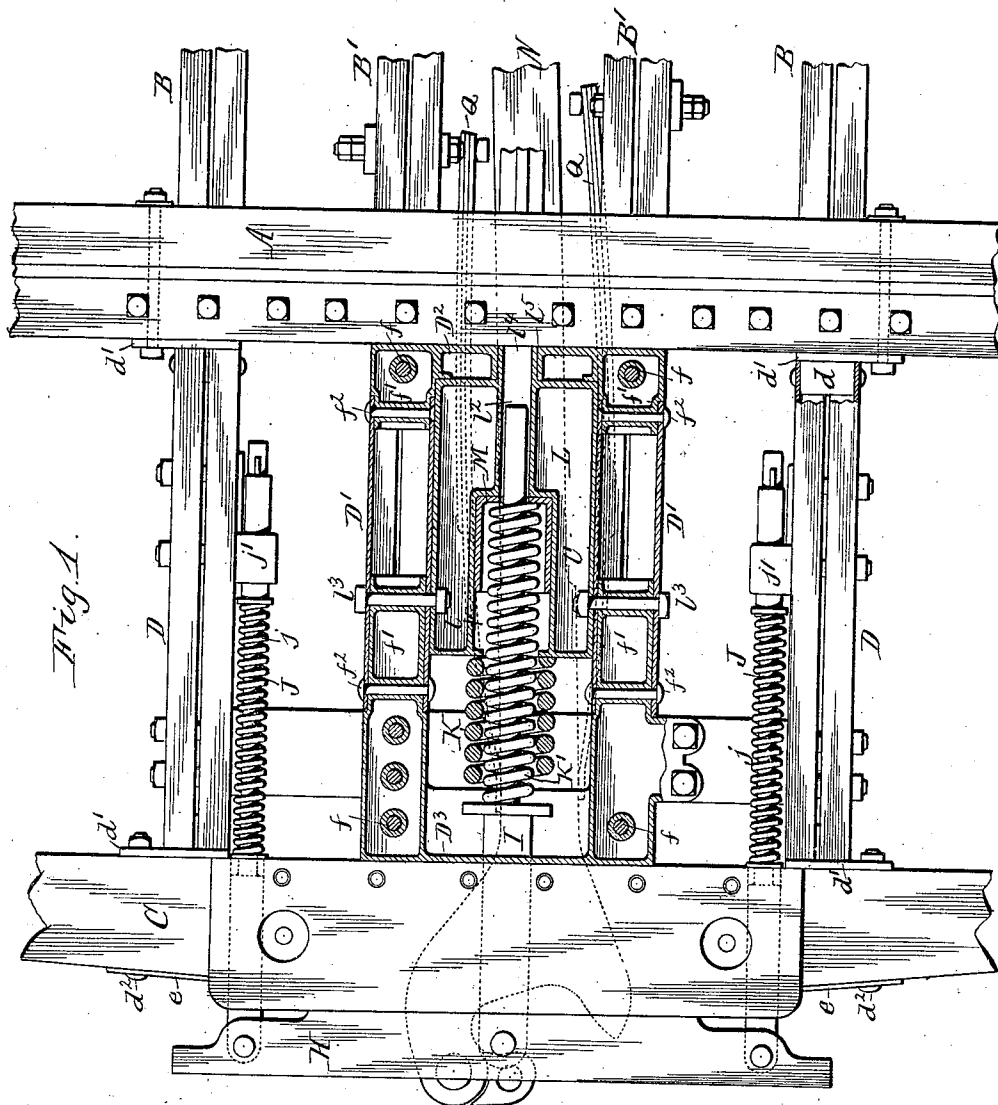
Patented Mar. 20, 1900.

W. F. RICHARDS.  
PLATFORM FOR RAILWAY CARS.

(No Model.)

(Application filed Aug. 8, 1898.)

4 Sheets—Sheet 1.



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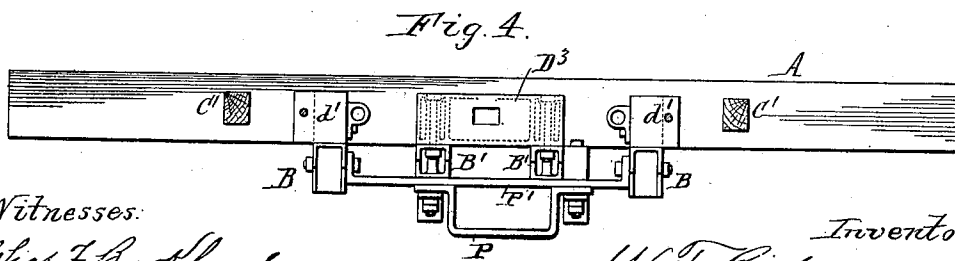
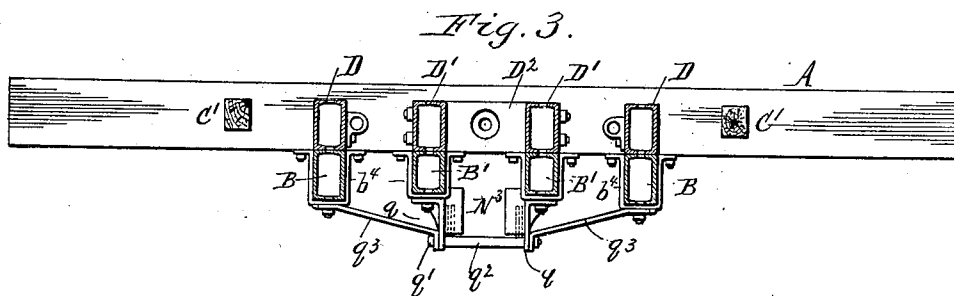
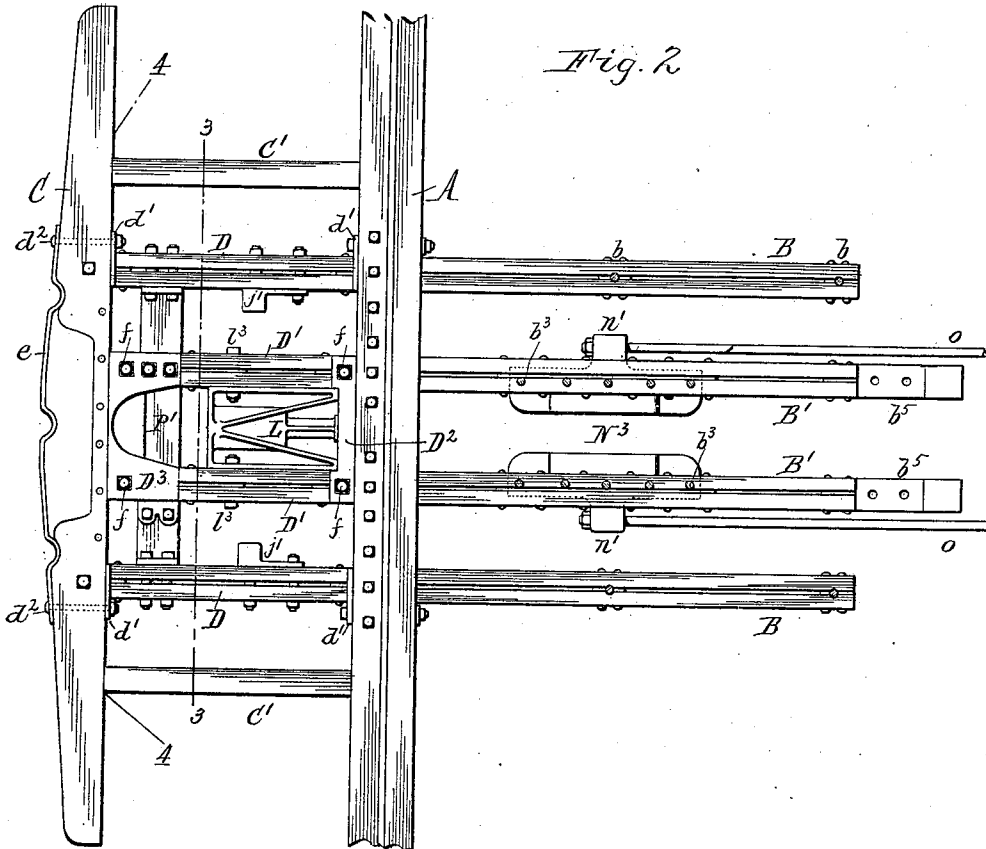
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4 Sheets—Sheet 3.

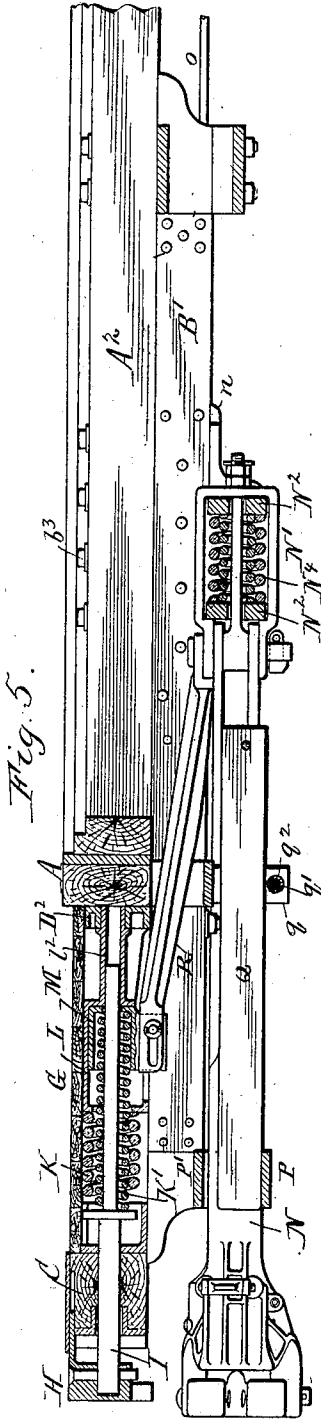


Fig. 5.

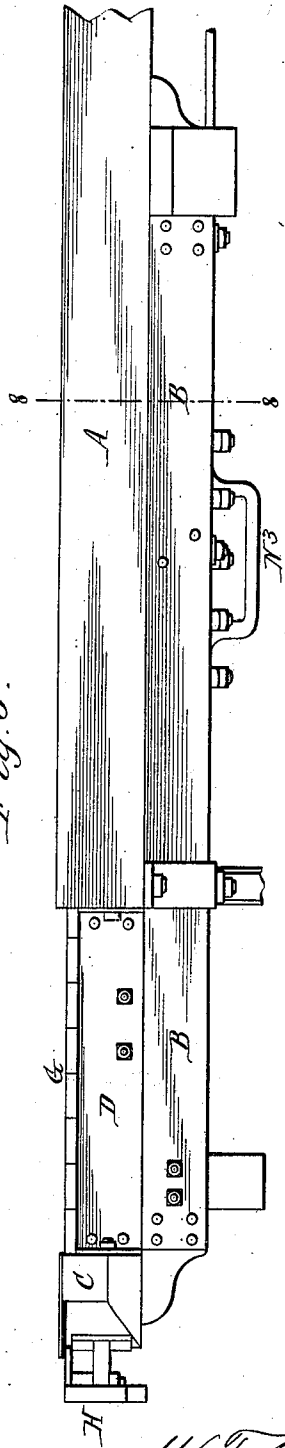


Fig. 6.

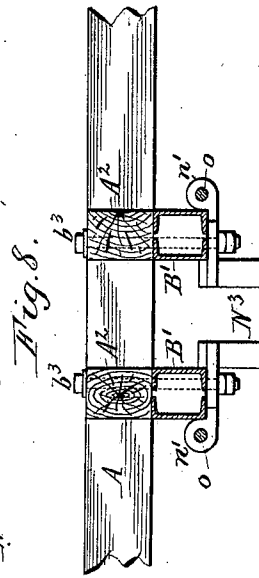


Fig. 7.

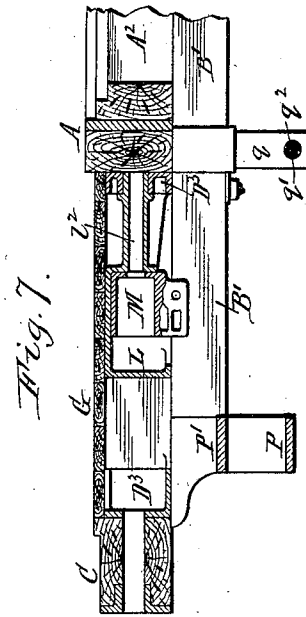


Fig. 8.

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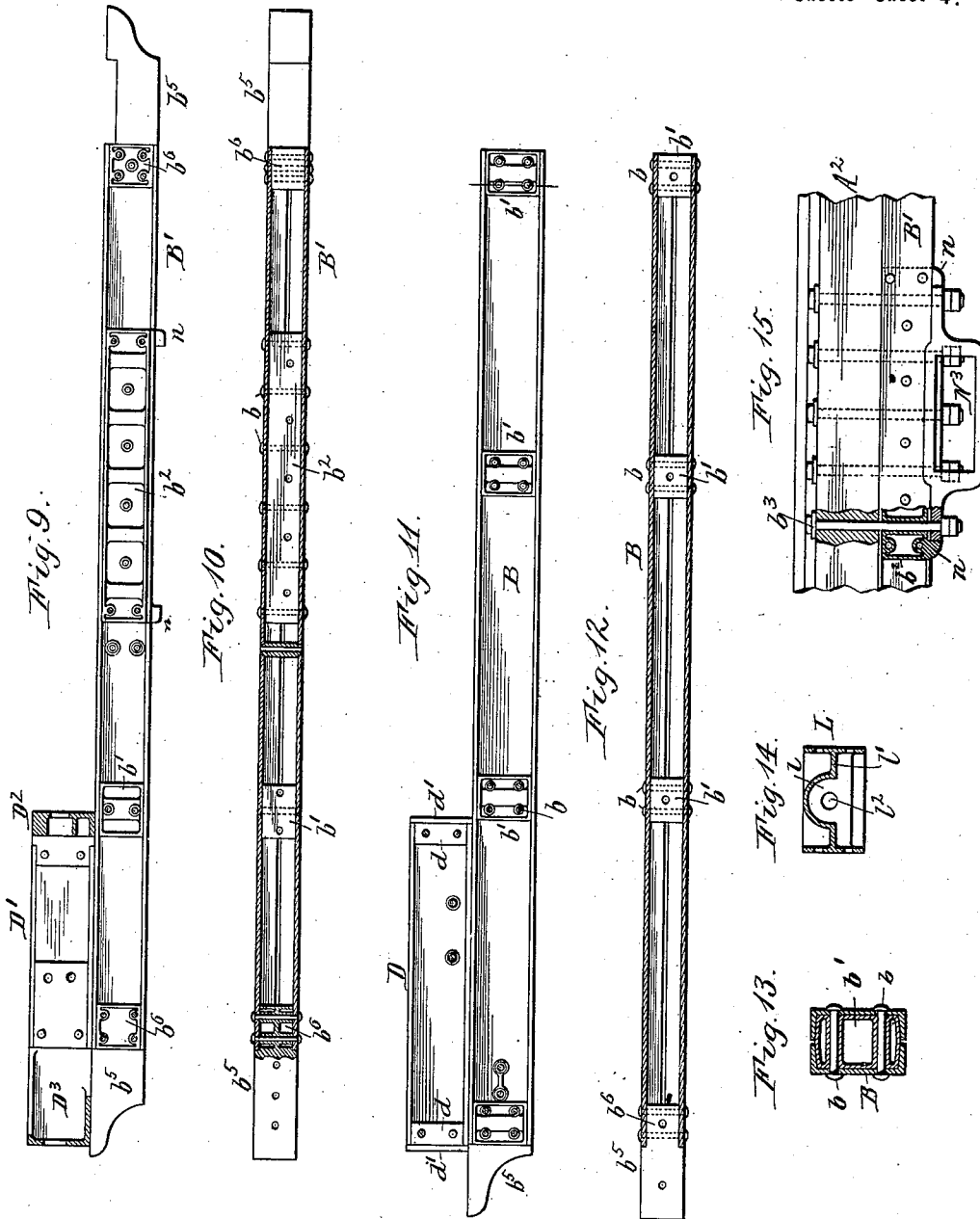
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4 Sheets—Sheet 4.

(No Model.)



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# UNITED STATES PATENT OFFICE.

WILLARD F. RICHARDS, OF BUFFALO, NEW YORK, ASSIGNOR TO THE  
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## PLATFORM FOR RAILWAY-CARS.

SPECIFICATION forming part of Letters Patent No. 645,649, dated March 20, 1900.

Application filed August 8, 1898. Serial No. 688,027. (No model.)

*To all whom it may concern:*

Be it known that I, WILLARD F. RICHARDS, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented a new and useful Improvement in Platforms for Railway-Cars, of which the following is a specification.

This invention relates to railway-cars in which the platforms are supported by metallic beams extending lengthwise of the car and secured to the sills or subframe of the car-body, and more especially to a metallic platform structure of this kind which is designed for use in connection with an oscillating buffer pivoted centrally to a center stem and near its ends to side stems, said side stems having springs for returning the buffer to its normal position after the car passes around a curve and the center stem having a light spring for holding the buffer in contact with the buffer of an adjoining car and a stiffer spring for resisting the heavy shocks received by the buffer.

The object of my invention is the provision of a metallic platform which is very strong and rigid, which can be produced at comparatively small cost, and which can be readily substituted for an ordinary wooden platform equipped with a buffer mechanism of the above description.

In the accompanying drawings, consisting of four sheets, Figure 1 is a top plan view, partly in section, of my improved metallic platform, showing the same in connection with a buffer of the kind above referred to, the flooring of the platform being omitted to expose the parts below the same. Fig. 2 is a detached top plan of the platform. Figs. 3 and 4 are transverse sections in lines 3 3 and 4 4, Fig. 1, respectively. Fig. 5 is a central longitudinal section of the platform and adjacent parts, the car-coupling being shown in elevation. Fig. 6 is a side elevation of the same. Fig. 7 is a fragmentary central longitudinal section of the platform with the buffer mechanism removed. Fig. 8 is a cross-section in line 8 8, Fig. 6. Fig. 9 is a sectional elevation of one of the main center beams of the platform and the frame surmounting the same, the near channel-bar of the beam being removed. Fig. 10 is a hori-

zontal section of said main beam with its end pieces shown in plan view. Fig. 11 is a sectional elevation of one of the main side beams of the platform and the auxiliary beam surmounting the same, the near channel-bar of each of said beams being removed. Fig. 12 is a horizontal section of said main side beam, taken immediately above its filling-blocks. Fig. 13 is a cross-section, on an enlarged scale, of one of said side beams, taken through one of the filling-blocks. Fig. 14 is a transverse section of the metallic buffer-block. Fig. 15 is a fragmentary side elevation of the platform, partly in section, showing the through-bolts which connect the metallic beams with the sills of the car-body.

Like letters of reference refer to like parts in the several figures.

A represents the end sill of the car-body, A' its longitudinal side sills, and A<sup>2</sup> its longitudinal center sills, these various sills being usually constructed of wood.

B B' represent metallic longitudinal beams secured to the under side of the side and center sills A' A<sup>2</sup> of the car-body, as shown in Figs. 5, 6, and 8, and extending forwardly under and beyond the end sill A of the car-body, these projecting portions forming the overhanging supports of the platform. These metallic beams extend rearwardly beyond the end sill a sufficient distance to afford a firm connection with the longitudinal sills of the car-body.

As shown in Figs. 11 to 13, each of the side beams B of the platform consists of a pair of channel-bars arranged side by side, with their webs arranged vertically and their flanges facing inwardly or toward each other and secured together by transverse bolts or rivets b, forming practically a rectangular box-girder. Between the channel-bars are interposed distance-pieces or space-blocks b', which are arranged at suitable intervals and through which the tie-bolts or rivets b pass. The space-blocks may be solid or of any other suitable construction; but for the sake of lightness they preferably consist of vertical and horizontal flanges or webs and perforated horizontal and vertical bosses for the passage of the connecting rivets or bolts.

The center beams B' of the platform are con-

constructed of channel-bars, substantially like the side beams B; but in addition to the short space-blocks  $b'$  they have a long space-block  $b^2$ , as shown in Figs. 9 and 10. These side and center beams are secured to the corresponding wooden sills of the car-body by vertical bolts  $b^3$ , which pass through said sills and the space-blocks  $b'$   $b^2$ , as shown in Figs. 8 and 15, and they are secured to the end sill of the car by straps  $b^4$ , as shown in Fig. 3. The platform-beams are preferably provided with separate end pieces  $b^5$  of malleable iron or other cast metal. As shown in Figs. 10 and 12, these end pieces are formed with reduced inner portions or tenons  $b^6$ , which are fitted in the ends of the box-like beams or girders and secured therein by transverse rivets or bolts. These end pieces are provided with square upright shoulders, which abut against the corresponding ends of the channel-bars of the beam. By this construction the end pieces of the beams can be cast in the desired shape and the channel-bars can be cut off straight or square, thus enabling ordinary commercial channel-bars of the proper length to be utilized, avoiding the expense of cutting the ends of the bars to a special form and materially reducing the cost of the beams.

The center beams  $B'$  are provided at both ends with such end pieces, while the side beams have such end pieces only at their front ends, as shown in Figs. 11 and 12. As shown in Figs. 9 and 10, the rear end pieces of the center beams are recessed to receive the body-bolster, which connects the longitudinal sills of the car-body.

C is the buffer-beam, which may be of wood and which is supported upon the outer ends of the platform-beams B  $B'$ , and C' are the usual wooden step-sills extending from the buffer-beam to the end sill of the car.

D represents metallic filling-beams or auxiliary platform-beams extending lengthwise from the end sill of the car-body to the buffer-beams and arranged directly above the front portions of the main platform-beams and supported thereon. These filling or auxiliary beams are preferably composed of channel-bars and intermediate space-blocks and constructed substantially like the main platform-beams B  $B'$ . They are provided with malleable-iron end pieces  $d$ , having flanges  $d'$ , whereby said beams are secured to the opposing front and rear sides of the end sill A and buffer-beam C, as shown in Figs. 1 and 2. The horizontal fastening-bolts  $d^2$ , which pass through the flanges of the front end pieces  $d$ , also pass through the metallic facing  $e$  of the wooden buffer-beam, whereby said facing and the front ends of the auxiliary platform-beams are fastened to the buffer-beam by the same bolts.

D' represents auxiliary central beams similar to the auxiliary side beams D, which are arranged directly above the main central platform-beams B' and which rest upon the latter. These central auxiliary beams do not

extend from the end sill of the car-body to the buffer-beam, like said side beams, but terminate at a distance therefrom, and the intervening spaces between the ends of said center beams and the end sill of the buffer-beam are occupied by transverse connecting-pieces  $D^2$   $D^3$ , preferably of malleable iron, which end pieces are secured to said intermediate beams and form therewith a rectangular frame, which is secured to the central platform-beams B' by vertical bolts  $f$ . The platform-floor G is supported on and secured to the beams D  $D'$  and the end pieces  $D^2$   $D^3$ , and these beams and end pieces are depressed below the end sill and buffer-beam the thickness of the flooring to render the latter flush with said beams and sill. The connecting-pieces  $D^2$   $D^3$  are formed at their ends with angular tenons or projections  $f'$ , which fit into the open ends of the auxiliary platform-beams D' and are secured therein by transverse rivets or bolts  $f^2$ , as shown in Fig. 1.

H is the transverse buffer, arranged on the front side of the buffer-beam and pivoted at its middle to the central buffer-stem I and near its ends to the side stems J. These several stems pass rearwardly through openings formed in the buffer-beam in a well-known manner. The side stems are provided with the usual springs  $j$ , and their rear portions are guided in the usual lugs or abutments  $j'$ , which latter are secured to the inner sides of the auxiliary side beams D of the platform, as shown in Fig. 1. The center stem I is provided with the customary heavy and light springs K  $K'$ , and its rear portion is guided in a metallic abutment or block L, arranged between the auxiliary center beams D' of the platform and bearing at its rear end against the rear connecting-piece  $D^2$  of said beams, as shown in Fig. 1. As shown in Figs. 1, 2, and 14, the abutment-block L consists of upright side and end walls, a longitudinal socket  $l$ , arranged between the side walls and connected therewith by horizontal webs  $l'$ , and a tube or smaller socket  $l^2$ , arranged in rear of the large socket  $l$  and opening into the latter. This small rear socket forms a guide for the rear portion of the center stem of the buffer, as shown in Fig. 1, while the large front socket receives the light buffer-spring K'. The latter bears at its rear end against a hollow follower M, which latter in turn bears against the rear end of said socket. The heavy buffer-spring K bears against the front end of the abutment-block. The block is secured in place by transverse bolts or rivets  $l^3$  passing through its side walls and the intermediate auxiliary beams D'. The block is provided at its rear end with a tenon or reduced portion  $l^4$ , which is fitted in an opening or recess  $l^5$ , formed in the front side of the rear connecting-piece  $D^2$ . As shown in Fig. 14, the large front socket of the abutment-block is open on its under side to permit the follower M to be introduced into the same.

N is the draw-bar or shank of the car-coup-

ling, attached at its rear end to the pocket-strap or yoke N'. N<sup>2</sup> are the usual follower-plates, N<sup>3</sup> the side lugs or plates in which the follower-plates are guided, and N<sup>4</sup> the draft-springs, arranged between the follower-plates. These side lugs or plates are preferably constructed of malleable iron and secured to the under side of the main center beams B' of the platform by the same vertical bolts b<sup>3</sup> which fasten said beams to the center sills of the car-body, these bolts being relieved from shearing strains by lips or stops n, formed on the under side of the long space-blocks b<sup>2</sup> and bearing against the ends of the side lugs, as shown in Figs. 9 and 15. The side lugs are formed with depressed ways which extend inwardly beyond the center beams B' and in which the follower-plates slide, and they are provided on the outer sides of said beams with perforated horizontal lugs n', to which are attached longitudinal rods o. These rods connect and tie together the side lugs at opposite ends of the car.

P is the carry-iron of the draw-bar, which is secured to the under side of the transverse supporting-bar P', which connects the front portions of the main side beams B of the platform, said bar being provided at its ends with lips or flanges which are bolted or otherwise secured to the inner sides of said beams, as shown in Fig. 4.

As shown in Figs. 1 and 5, Q are the usual flat springs, which center the laterally-swinging draw-bar. These springs abut between their ends against depending hangers or brackets q, secured to the under side of the main center beams of the platform. A removable transverse bolt q' passes through the lower ends of these hangers, and this bolt is surrounded by a thimble or distance-sleeve q<sup>2</sup>, which bears against the inner side of the hangers.

q<sup>3</sup> represents inclined transverse braces which extend from the lower ends of the hangers to the under side of the main side beams B, as shown in Fig. 3. These braces are provided at their inner ends with perforated lips, through which the transverse bolt q' passes. This construction permits the draw-bar to be readily removed from between the hangers q by simply removing the nut from the bolt q' and withdrawing the bolt from the hangers q and the distance-sleeve q<sup>2</sup>.

R is the usual coupling or pressure-bar, which connects the hollow follower M with the draw-bar.

My improved platform structure is very strong and rigid. The main platform-beams B B', which practically have the form of box-girders, possess great lateral stiffness and offer considerable resistance to the crushing or compression strains incident to collisions. The short or auxiliary beams D D' of the platform, while serving as filling-pieces which raise the floor of the platform to the proper level, also act as compression beams or mem-

bers which aid in resisting the shocks of collisions.

As the platform structure is made up almost wholly of malleable castings and structural steel no special machinery or tools are required for its manufacture, rendering its cost comparatively small.

The space-blocks or distance-pieces of the metal beams not only prevent crushing of the beams, but also afford a solid bolting or attaching surface for the same and a large bearing-surface for the bolts, which prevents cutting or shearing of the same.

The metallic block L and the rectangular frame D' D<sup>2</sup> D<sup>3</sup>, which incloses the same, form a very strong and rigid abutment for the buffing-springs, which is not liable to be buckled or otherwise displaced.

My improved platform can be easily substituted for an ordinary wooden platform having a buffer mechanism of the kind herein shown and described.

While my improvements are intended more especially for use in connection with such a buffer mechanism, some of the improvements are generally applicable to passenger-cars, and I do not therefore wish to limit myself to the special use above referred to.

I claim as my invention—

1. The combination with the sills or subframe of the car-body, of metallic longitudinal beams secured to the under side of said sills or subframe and extending beyond the ends thereof, and each composed of a pair of channel-bars arranged side by side with their flanges facing inwardly, space-blocks arranged between said channel-bars, transverse bolts or rivets passing through said bars and space-blocks, and vertical bolts passing through said space-blocks and the sills of the car-body, substantially as set forth.

2. The combination with the sills or subframe of the car-body, of metallic longitudinal beams secured to the under side of said sills and each composed of a pair of channel-bars arranged side by side with their flanges facing inwardly, bolts or rivets connecting said bars, and separate cast-metal end pieces secured to the ends of said beams, substantially as set forth.

3. The combination with the longitudinal and end sills of the car-body, of metallic longitudinal beams secured to the under side of said longitudinal sills and extending forwardly beyond the end sill, a buffer-beam supported upon said longitudinal beams and metallic filling-beams arranged lengthwise between said buffer-beam and the end sill of the car, substantially as set forth.

4. The combination with the longitudinal and end sills of the car-body, of metallic longitudinal beams secured to the under side of said longitudinal sills and extending forwardly beyond the end sill, a buffer-beam supported upon said longitudinal beams, metallic filling-beams arranged lengthwise between

said buffer-beam and the end sill of the car, and each composed of a pair of channel-bars arranged side by side with their flanges facing inwardly and bolts or rivets connecting said bars, substantially as set forth.

5 5. The combination with the longitudinal and end sills of the car-body, of metallic longitudinal beams secured to the under side of said longitudinal sills and extending forwardly beyond the end sill, a buffer-beam supported upon said longitudinal beams, metallic filling-beams arranged lengthwise between said buffer-beam and the end sill of the car, and each composed of a pair of connected  
15 channel-bars arranged side by side with their flanges facing inwardly, and cast-metal end pieces secured to the ends of said beams and connected with said end sill and buffer-beam, substantially as set forth.

20 6. The combination with the end sill of the car-body and the buffer-beam, of a metallic frame arranged centrally between said end sill and said buffer-beam and composed of longitudinal beams each consisting of a pair of  
25 connected channel-bars arranged side by side with their flanges facing inwardly, and transverse cast-metal end pieces having tenons or projections which are secured in the end portions of said beams, substantially as set forth.

30 7. The combination with the end sill of the car-body and the buffer-beam, of a metallic abutment-block arranged between the end

sill and the buffer-beam and composed of upright side and end walls, a socket arranged between said side walls and having an open  
35 lower side and a reduced socket or tube extending rearwardly from said front socket, substantially as set forth.

8. The combination with the sills or sub-frame of the car-body, of metallic longitudinal beams secured to the under side of said  
40 sills, side lugs or plates for the followers of the draft-springs secured to said metallic beams and provided on the outer sides of said beams with lugs or ears, and longitudinal tie-  
45 rods extending rearwardly from said ears, substantially as set forth.

9. The combination with the sills or sub-frame of the car-body, of metallic beams secured to the under side of said sills, abutments or hangers for the centering-springs of  
50 the draw-bar secured to an adjacent pair of said metallic beams, a transverse bolt connecting said hangers or abutments and inclined braces extending laterally from said  
55 hangers to the beams arranged on opposite sides of the supporting-beams of said hangers, substantially as set forth.

Witness my hand this 2d day of August, 1898.

WILLARD F. RICHARDS.

Witnesses:

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