

No. 620,803.

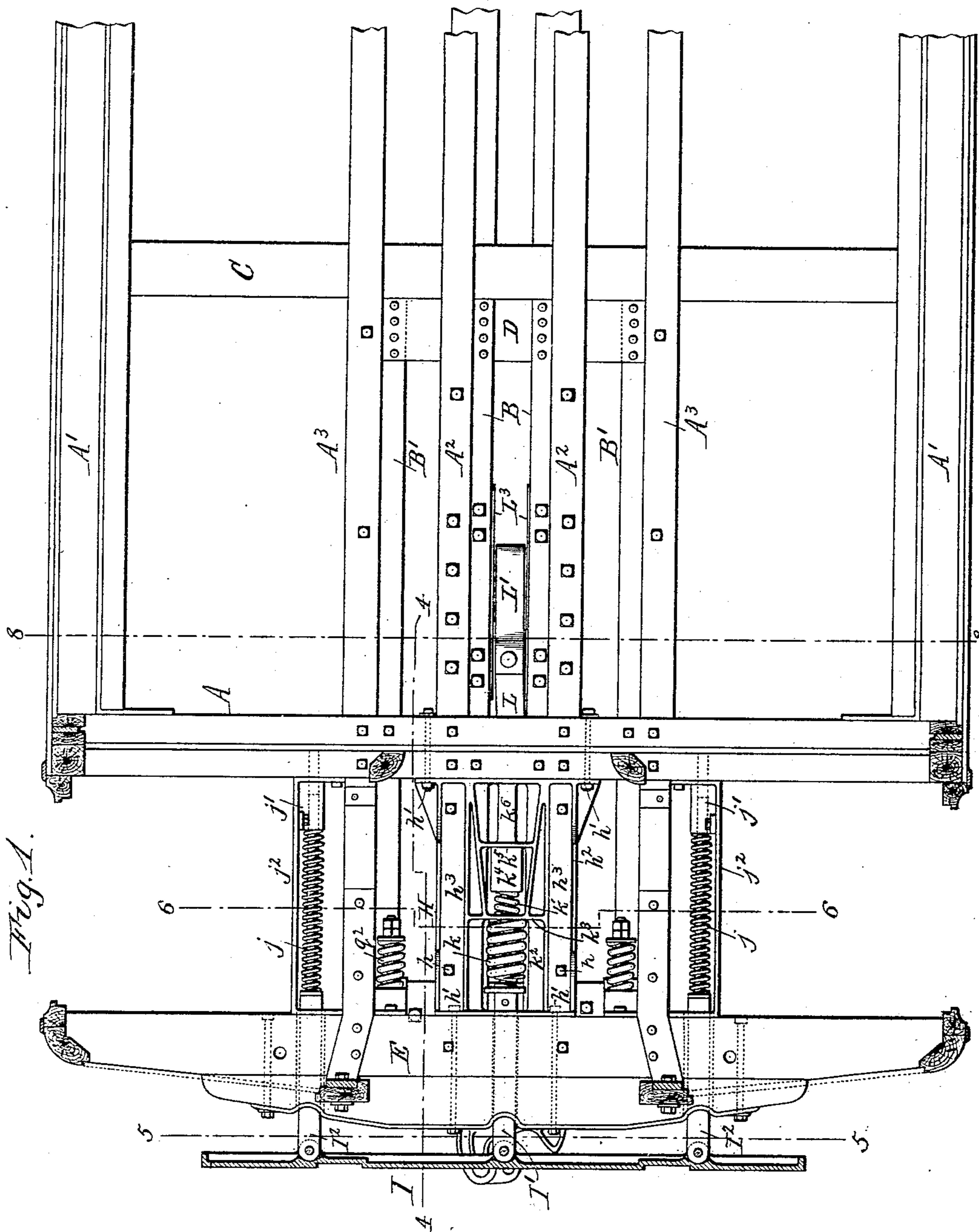
W. F. RICHARDS.
RAILWAY CAR.

Patented Mar. 7, 1899.

(Application filed Dec. 15, 1898.)

(No Model.)

5 Sheets—Sheet 1.



Witnesses:
Chas. F. Burkhardt.
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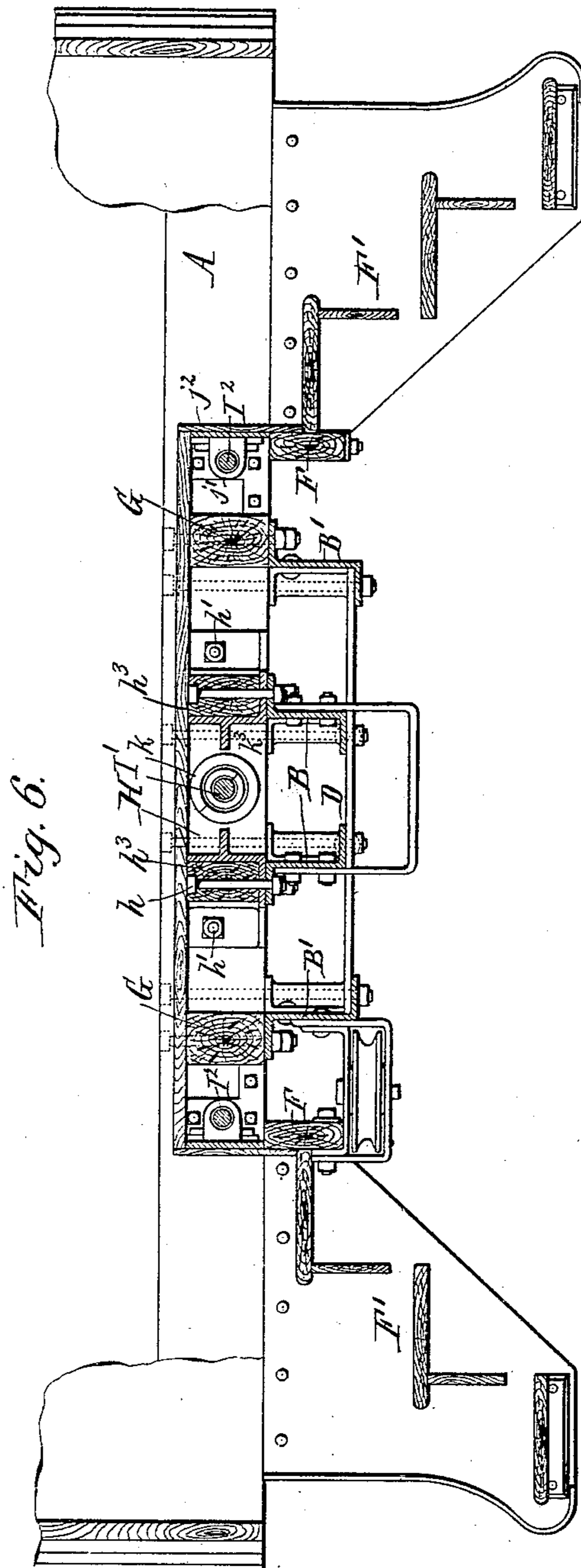
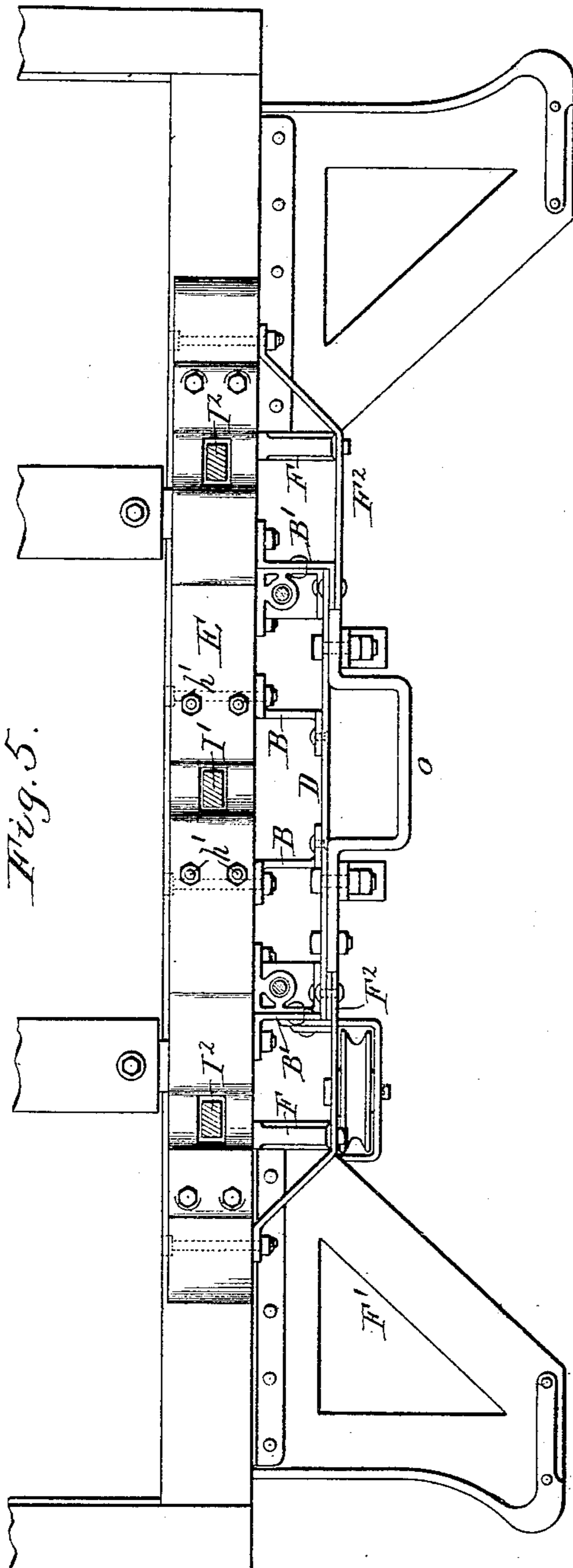
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5 Sheets—Sheet 3.



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W. F. RICHARDS.

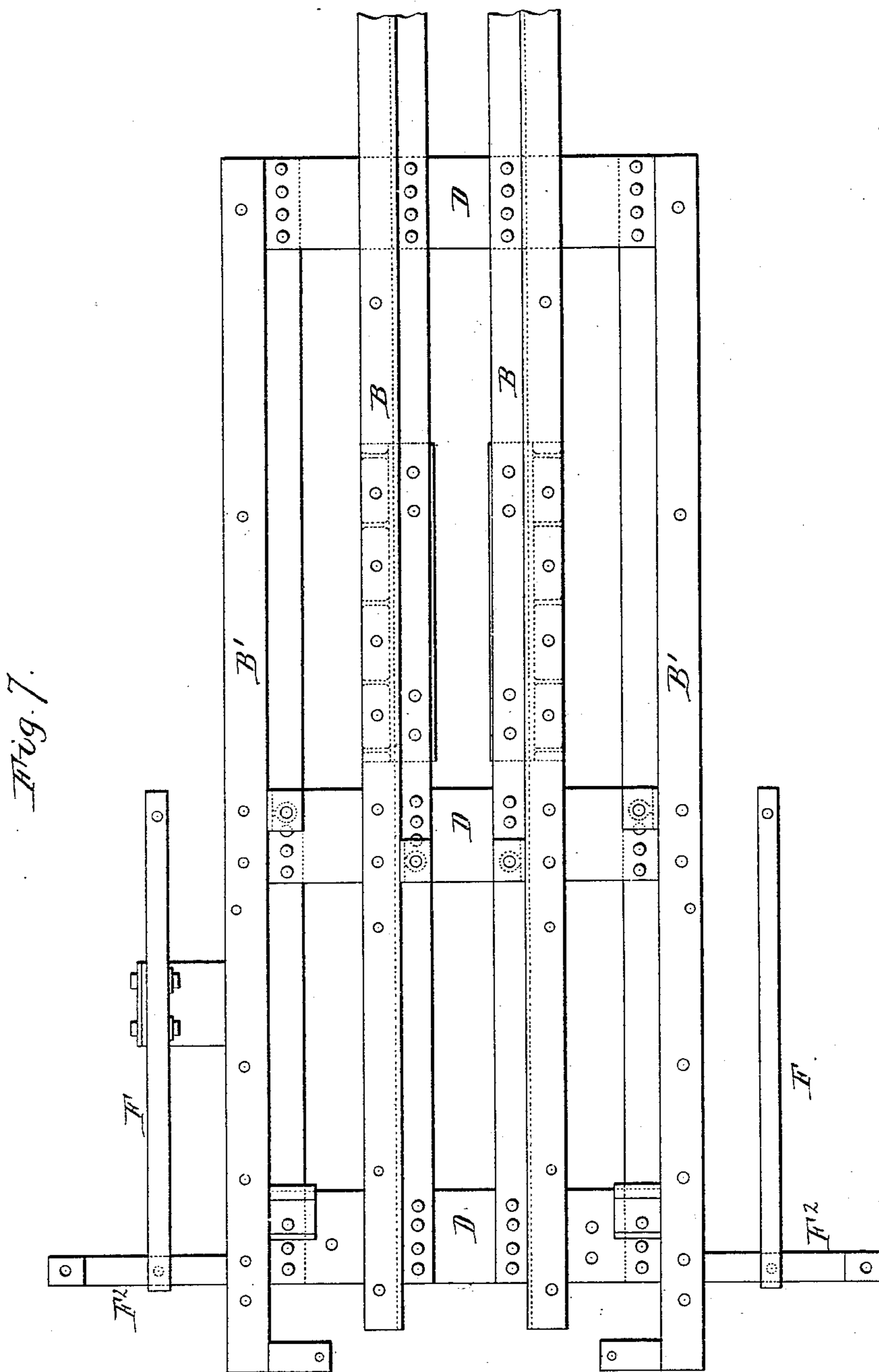
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(Application filed Dec. 15, 1898.)

(No Model.)

5 Sheets—Sheet 4.



Witnesses:
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No. 620,803.

Patented Mar. 7, 1899.

W. F. RICHARDS.
RAILWAY CAR.

(Application filed Dec. 15, 1898.)

(No Model.)

5 Sheets—Sheet 5.

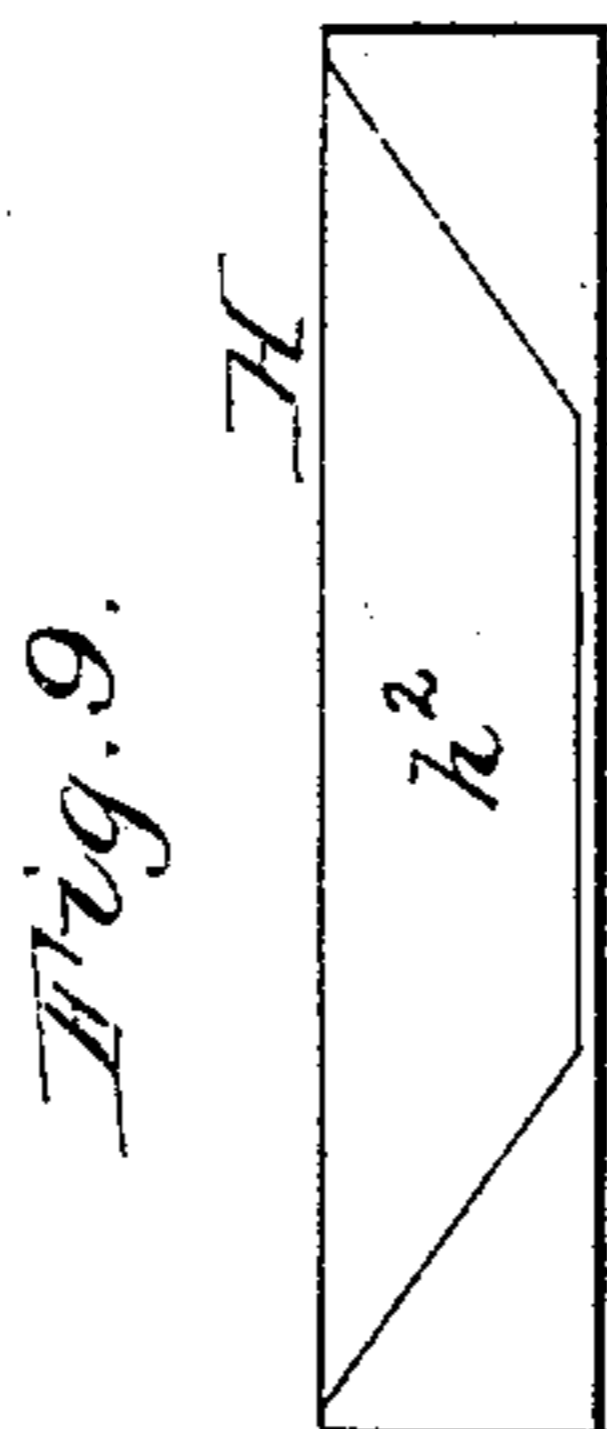
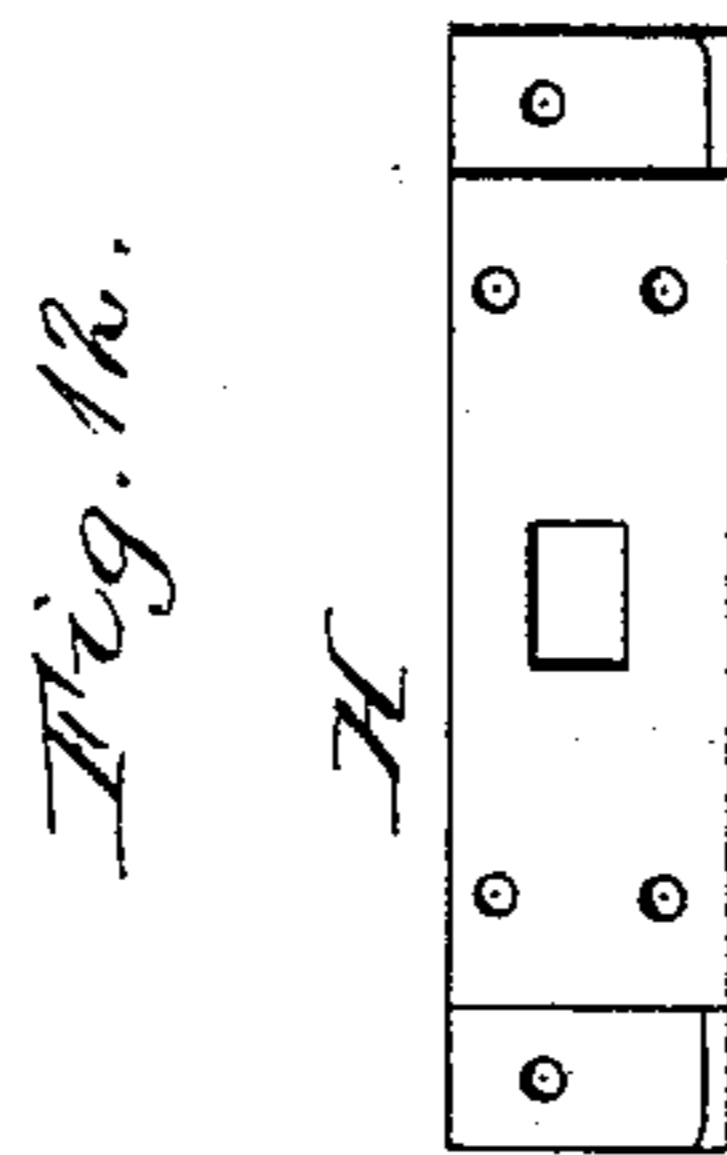
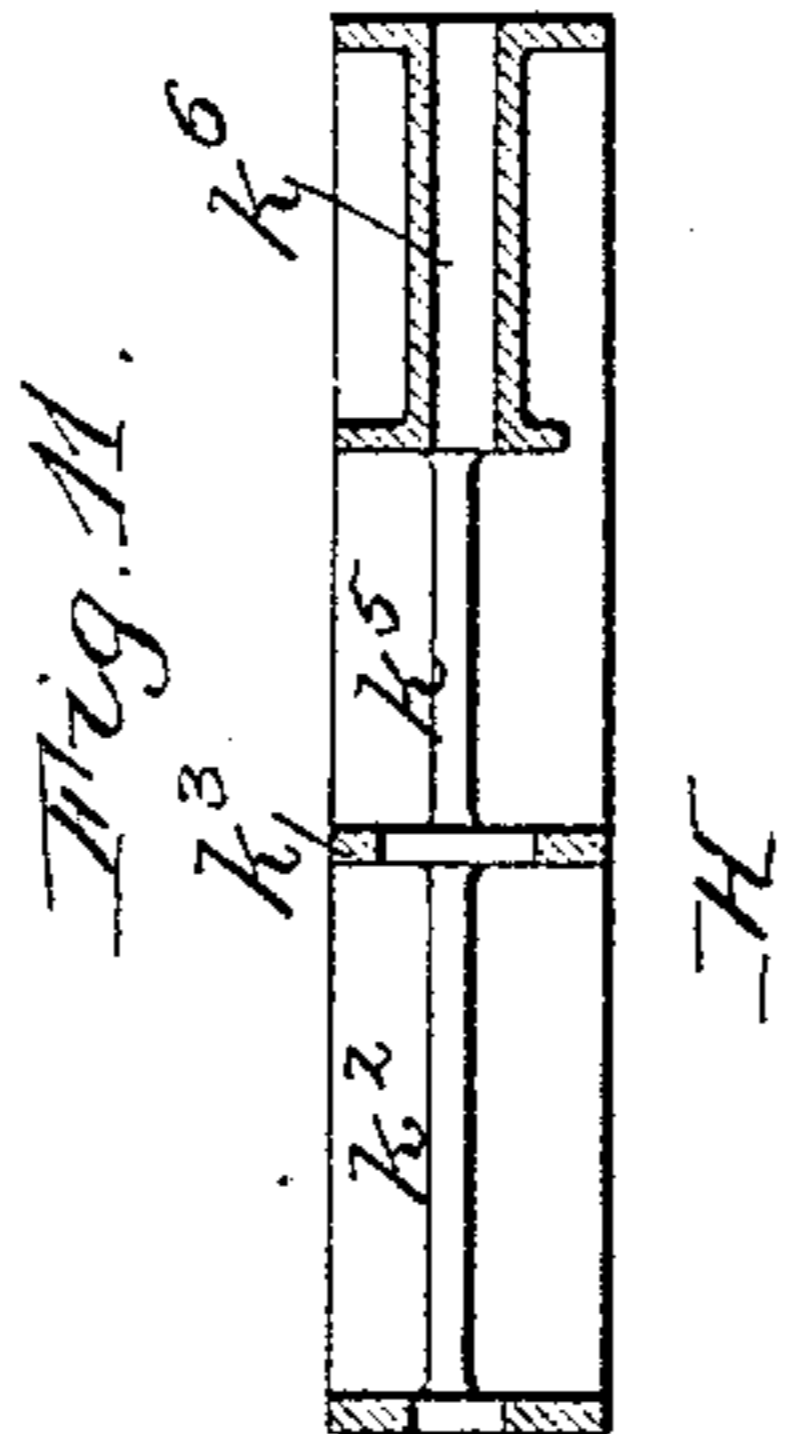
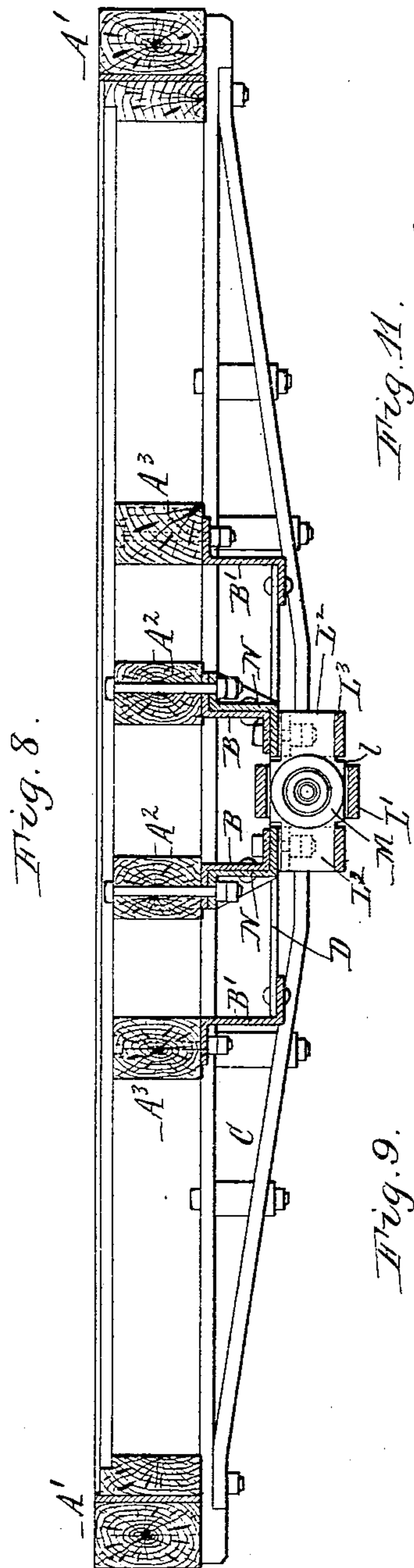
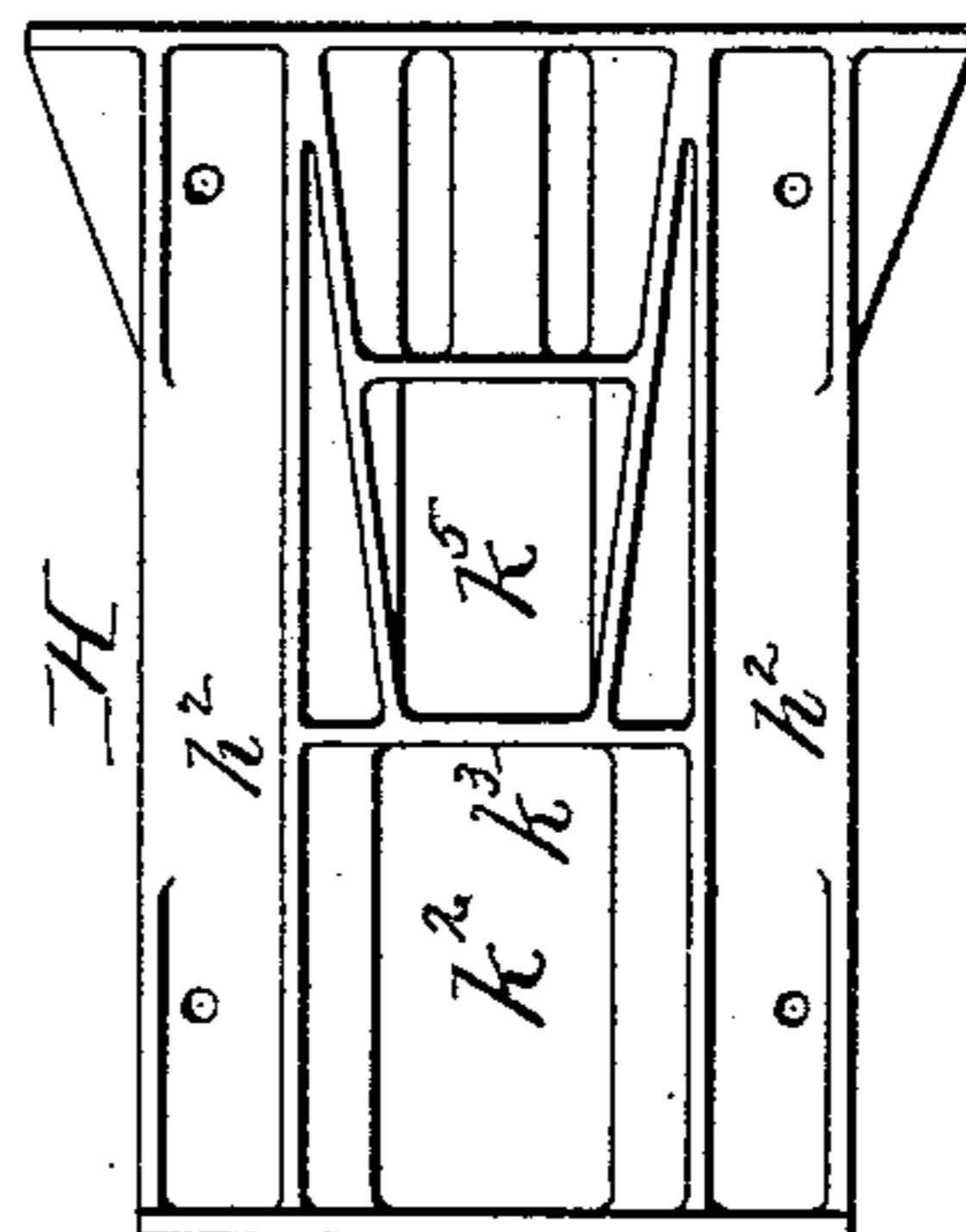


Fig. 10.



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UNITED STATES PATENT OFFICE.

WILLARD F. RICHARDS, OF BUFFALO, NEW YORK, ASSIGNOR TO THE
GOULD COUPLER COMPANY, OF NEW YORK, N. Y.

RAILWAY-CAR.

SPECIFICATION forming part of Letters Patent No. 620,803, dated March 7, 1899.

Application filed December 15, 1898. Serial No. 699,310. (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 new and useful Improvements in Railway-Cars, of which the following is a specification.

This invention relates to railway-cars having platforms supported by metallic beams or sills and commonly known as "steel platforms."

One of the leading objects of my invention is to provide a platform of this character which possesses great strength and rigidity both lengthwise and crosswise of the car, so as to withstand to a large degree the lateral as well as compression strains and shocks incident to rough usage and collisions.

The invention has the further objects to so construct the platform that the shocks received by the same are transmitted to the sills of the car-frame in a direct line, so as to distribute the force of the impact and avoid undue strain upon the fastening-bolts and other parts of the structure, to strengthen the connection between the side lugs of the draft devices and facilitate the renewal and repair of the same, to secure the carry-iron of the draw-bar against lateral displacement by simple means, and to improve the construction of the platform structure in other respects.

In the accompanying drawings, consisting of five sheets, Figure 1 is a fragmentary horizontal section of a railway-car provided with my improved platform, the flooring of the car and platform being omitted to expose the parts below the same. Fig. 2 is a central longitudinal section thereof, the car-coupling being omitted. Fig. 3 is a side elevation of the base-frame of the car and the platform with the step-supporting beams removed. Fig. 4 is a longitudinal section in line 4 4, Fig. 1, the car-coupling and the buffer being omitted. Figs. 5 and 6 are transverse vertical sections in lines 5 5 and 6 6, Fig. 1, the car-coupling being omitted. Fig. 7 is a detached top plan view of the metallic frame of the platform, the cast-metal filling-block being omitted. Fig. 8 is a transverse vertical section in line 8 8, Fig. 1. Fig. 9 is a detached side elevation of the metallic filling-

block. Fig. 10 is a top plan view thereof. Fig. 11 is a central longitudinal section of the same. Fig. 12 is a front view thereof.

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

A is the end sill of the car-body, A' the side sills, A² the two center sills, and A³ the intermediate sills, these various sills being usually constructed of wood.

B B' represent longitudinal beams of Z-shaped cross-section secured to the under side of the center and intermediate sills A² A³ of the car-body by vertical bolts or rivets, as shown in Figs. 2, 3, 4, and 8, and extending forwardly under and beyond the end sill of the car-body, so as to form the overhanging supports of the platform. These metallic beams extend rearwardly beyond the end sill of the car a sufficient distance to afford a firm connection with the longitudinal sills of the car-body. In the construction shown in the drawings the side beams B' of the platform extend to the body-bolster C, while the center beams B extend rearwardly beyond the same, but, if desired, these center beams may extend only to the body-bolster.

The Z-beams on one side of the longitudinal center line of the car face in an opposite direction to those on the opposite side thereof, or, in other words, the four beams are so arranged that their upper flanges face outwardly and their lower flanges inwardly, as shown in Figs. 5, 6, and 8. The lower portions of the four Z-beams are connected together by transverse tie-plates D, arranged at suitable intervals and secured to the lower flanges of the beams by vertical bolts or rivets. As shown in Figs. 5, 6, and 8, the beams are not all of the same depth, but the side beams B' are so much deeper than the center beams B as the thickness of the tie-plates D, and these plates are secured to the under side of the bottom flanges of the center beams and to the upper sides of the corresponding flanges of the side beams.

E is the buffer-beam or end sill of the platform, which may be of wood and which is supported upon the outer ends of the Z-shaped platform-beams B B' and secured thereto by vertical bolts passing through said beam and the upper flanges of the Z-beams. The Z-

beams, while supporting the buffer-beam, are tied together at the upper portions by said beam. The upper portions of the **Z**-beams are likewise tied together in rear of the buffer-beam by the end sill of the car and indirectly by the body-bolster which tie the sills of the car-frame, the upper flanges of the **Z**-beams being secured to the buffer and car end sill by vertical bolts. By constructing the main frame of the platform of **Z**-beams tied together at the top and bottom, as described, a very strong and rigid structure is obtained, which not only has vertical stiffness and offers great resistance to compression strains, but withstands to a large degree any lateral strains tending to wrench the platform from the car, the powerful resistance offered to lateral strains being due to the large leverage which the wide flanges of the beams oppose to a force tending to tip the same.

F, Figs. 5, 6, and 7, represents short longitudinal beams, preferably of wood, which are arranged on the under side of the platform, on the outer side of the **Z**-beams **B B'**, and to which the inner portions of the steps **F'** are secured. These step-supporting beams are stiffened by transverse braces **F²**, secured at their ends to the under side of the buffer-beam and the outer **Z**-beams, respectively, and extending underneath the step-beams, to which latter they are secured by vertical bolts.

G represents wooden longitudinal filling pieces or timbers which rest upon and are secured to the upper flanges of the outer **Z**-beams **B'** and to which the flooring of the platform is secured, as shown in Fig. 6.

H, Figs. 1, 2, 6, 9, 10, 11, and 12, is a rectangular metallic filling block or frame arranged centrally between the floor or filling-pieces G and extending from the car end sill to the buffer-beam. This frame is cast in a single piece, preferably of malleable iron, and rests upon the central **Z**-beams **B**, to which latter it is secured by vertical bolts or rivets **h**, passing through the upper flanges of these beams and through the bottom of the frame. The frame is also secured at its front and rear ends to the car end sill and the buffer-beam, respectively, by longitudinal bolts **h'**, passing through said members and through end flanges of the frame, as shown in Figs. 1 and 6. The upper surface of this frame is flush with the filling-pieces G and supports the central portion of the car-floor. If desired, the frame may be provided near its lateral edges with longitudinal recesses or depressions **h²**, adapted to receive wooden filling-pieces **h³**, Fig. 6, for the attachment of the flooring similar to the filling-pieces G; but the use of these intermediate filling-pieces is optional. When they are employed, they may be secured in place by the same vertical bolts which fasten the frame H to the central **Z**-beams **B**, as shown in Fig. 6. As the frame H is arranged in the plane of the base-frame of the car and the buffer-beam, it transmits the shocks and strains received by the platform

directly to the frame-timbers of the car, thus relieving the fastening-bolts of the **Z**-beams from strains which tend to loosen and shear the bolts. This frame also forms a solid backing or abutment for the middle of the buffer-beam, at which point the beam is most liable to break under a severe shock.

Any suitable or well-known buffer mechanism may be used in connection with my improved steel platform. That shown in the drawings and commonly known as the "Gould" buffer consists of a transverse vertical buffer-plate **I**, supported by a main or center stem **I'** and side stems **I²**, to which stems the buffer-plate is pivoted, so as to be capable of oscillating on the stems for assuming an angular position when the car passes around a curve. 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 longitudinal bars **j²**, arranged on the outer sides of the outer filling-beams G and provided with end flanges, which are bolted to the car end sill and the buffer-beam, as shown in Fig. 1. The center stem **I'** is provided with the customary heavy and light springs **k k'**. As shown in Figs. 1, 2, 10, and 11, the metallic frame H is formed in its front portion with a central pocket or recess **k²**, which receives the center stem and its springs, and the center stem passes through the web or wall **k³**, forming the rear wall of this recess, while its large spring **k** bears at its rear end against said web. The light spring **k'** extends rearwardly through the opening of this web, as shown in Figs. 1 and 2, and bears at its rear end against a hollow follower **k⁴**, which in turn abuts against the rear wall of a second recess or chamber **k⁵**, arranged behind the recess **k²** and containing said follower. The rear portion of the center stem is guided in a longitudinal opening or socket **k⁶**, formed in the rear portion of the frame H. To render this frame light as well as strong, the same is composed of upright flanges connected by horizontal webs, as shown.

L is the draw-bar of the car-coupling, which is attached at its rear end to the usual pocket strap or yoke **L'**.

L² are the usual follower-plates, passing through the strap and guided in the side lugs or carriers **L³**, and **M** the draft-springs, arranged between the follower-plates in the customary manner. These side lugs are carried by longitudinal brackets or plates **N** of **Z**-shaped cross-section, which are secured to the outer sides of the center **Z**-beams and follow the contour of said beams, as shown in Figs. 2 and 8. The upper flanges of these **Z**-brackets may be secured to the upper flanges of the **Z**-beams **B** by the same bolts which fasten the latter to the longitudinal car-sills, as shown in Fig. 8. The end flanges of the side lugs bear against the under side of the

bottom flanges of the **Z**-brackets and are secured thereto by vertical bolts or rivets. To relieve these bolts from shearing strains and prevent the bolt-holes from wearing oblong so far as possible, the **Z**-shaped brackets **N** are provided at their ends with depending lips or stops *n*, against which the ends of the side lugs abut and which prevent longitudinal displacement of the side lugs on the brackets, as shown in Fig. 2. By employing **Z**-beams for the frame of the platform, arranged as described, and connecting the side lugs with the lower flanges of the center **Z**-beams a strong and compact arrangement of these lugs is obtained without the necessity of offsetting the same with reference to the beams, as is required in some platform structures of this character.

The lower flanges of the **Z**-brackets **N** are arranged on the under side of the bottom flanges of the **Z**-beams and extend inwardly beyond the inner edges thereof, as shown in Fig. 8. By this construction the **Z**-brackets serve not only as supports for the side lugs, but also as chafing-plates, which receive the wear of the upper sides of the followers, thus relieving the bottom flanges of the **Z**-beams from such wear both on their under sides and at their inner edges and avoiding the necessity of replacing these **Z**-beams, which would be necessary if the followers were allowed to bear directly against the same. As shown, the upper and lower portions of the followers are contracted to form shoulders *l*, which bear against the projecting lower flanges of the **Z**-brackets and the inner edges of the side lugs.

Heretofore the side lugs have been secured to the car-sills by bolts extending through the lugs, the platform-beams, and the car-sills; but this construction is unsatisfactory, because in order to renew or repair a side lug or remove the draw-gear it is necessary to remove these long fastening-bolts, which is inconvenient, as they have to be withdrawn upwardly through the floor of the car. In my improved construction the **Z**-brackets **N** are secured to the car-sills and the side lugs are secured to these brackets by separate bolts, which are easily accessible from the outside of the car, enabling the side lugs or bolts to be readily replaced in case they become broken or the holes in the lugs wear oblong.

o is the carry-iron of the draw-bar, which is secured to the under side of the front tie-plate by bolts or rivets passing through said plate and the end flanges or lips of the carry-iron, as shown in Figs. 2, 3, and 5. These flanges are arranged to abut at their outer ends against the lower flanges of the outer **Z**-beams **B'**, which are arranged on the under side of the adjacent tie-plate, as shown in Fig. 5. The lower flanges of said **Z**-beams thus form stops or shoulders, between which the carry-iron is confined, relieving the fastening-bolts of the iron from shearing strains

and preventing wear of the bolt-holes in the adjacent tie-plate and loosening of the bolts. This tie-plate also acts as a chafing-plate for the top of the draw-bar. The braces **F**², which are secured to the under side of the outer **Z**-beams, terminate at the inner edge of the lower flanges of said beams, as shown in Fig. 5, and form, with said flanges, stop-shoulders of the same depth as the thickness of the carry-iron flanges.

Referring to Fig. 3, **P** is one of the usual flat centering-springs, which bear against opposite sides of the draw-bar for returning the latter and the draw-head to their normal central position as the car passes from a curve to a straight section of track. These springs form no part of my invention and may be of any other suitable construction.

q, Figs. 2, 3, and 4, are the usual safety coupling-chains of the car, *q'* the yielding longitudinal eyebolts carrying the chains, and *q*² the springs of the bolts. Each of the eyebolts is guided near its front end in a bracket or bearing *r*, arranged on the inner side of the adjacent outer **Z**-beam **B'** and secured by bolts or rivets to the web of said beam and to the under side of the buffer-beam. The eyebolts are guided near their rear ends in similar brackets *r'*, secured to the inner side of the same **Z**-beams and the buffer-beam. Each of these rear brackets is provided on its lower rear portion with a depending flange or lip *r*², which overlaps the rear edge of the adjacent tie-plate of the **Z**-beams, as shown in Fig. 4, which construction enables these brackets to withstand the draft strain exerted against them by the springs of the eyebolts, which springs bear against the rear side of said brackets.

In my improved construction the connected **Z**-beams mutually brace each other, forming a very strong and rigid platform structure which offers great resistance to the crushing strains and shocks incident to collisions and which at the same time does not exceed the weight of a wooden platform. Among other advantages of this construction is the simplicity of the attachments permitted by the use of the **Z**-beams and the large surfaces afforded by the large flat parallel flanges of the **Z**-beams for all contact-joints and for rivets and bolt-heads and nuts.

The integral filling block or frame **H**, while serving to stiffen the buffer-beam at the point where the greatest buffing strains are exerted, also aids in supporting the platform structure by reason of its attachment to the end sill of the car-body.

The platform is built largely of structural steel and malleable castings, and no special machinery or tools are therefore required for its manufacture, rendering the cost of the platform comparatively small.

Although this platform has special advantages in connection with a buffer mechanism of the kind herein shown and described, my improvements are not limited to that use, but

are generally applicable to cars having platforms.

I claim as my invention—

1. The combination with the sills or base-frame of the car-body, of longitudinal **Z**-beams secured to the under side of said sills and extending beyond the end sill of the car-body, and a buffer-beam secured to the projecting portions of said **Z**-beams, substantially as set forth.

2. The combination with the sills or base-frame of the car-body, of longitudinal **Z**-beams secured to the under side of said sills and extending beyond the end sill of the car to form platform-supports, a buffer-beam secured to the upper flanges of said **Z**-beams, and a tie plate or plates secured to the lower flanges of said beams, substantially as set forth.

3. The combination with the sills or base-frame of the car-body, of longitudinal center and side beams of **Z**-shaped cross-section secured to the under side of said sills and extending beyond the end sill of the car-body to form platform-supports, said side beams being of greater depth than said center beams, and a tie plate or plates connecting said **Z**-beams and secured to the under side of the bottom flanges of said center beams and to the upper side of the bottom flanges of said side beams, substantially as set forth.

4. The combination with the sills or base-frame of the car-body, of longitudinal side and center beams of **Z**-shaped cross-section secured to the under side of said sills and projecting beyond the end sill of the car-body, the **Z**-beams on opposite sides of the center line of the car facing in opposite directions, a buffer-beam secured to the upper flanges of said beams, and a tie plate or plates secured to the lower flanges thereof, substantially as set forth.

5. The combination with the sills or base-frame of the car-body, of longitudinal beams secured to the under side of said sills and extending beyond the end sill of the car to form platform-supports, a buffer-beam secured to the upper side of said longitudinal beams, and an integral cast-metal filling-frame secured to the upper side of said longitudinal beams and extending from the end sill of the car-body to the buffer-beam, substantially as set forth.

6. The combination with the sills or base-frame of the car-body, of longitudinal beams secured to the under side of said sills and extending beyond the end sill of the car to form platform-supports, a buffer-beam secured to the upper side of said beams, a metallic filling frame or block arranged above said beams and extending from said buffer-beam to the end sill of the car-body, and longitudinal fastening-bolts connecting the ends of said metallic frame to the buffer-beam and the end sill, substantially as set forth.

7. The combination with the sills or base-frame of the car-body, and longitudinal **Z**-beams secured to the under side of said sills,

a draw-bar arranged between said **Z**-beams and provided at its rear end with a yoke containing a pair of followers and an interposed spring or springs, brackets of **Z**-shaped cross-section secured to said **Z**-beams, and side lugs or guides for said followers secured to said brackets, substantially as set forth.

8. The combination with the sills or base-frame of the car-body, and longitudinal **Z**-beams secured to the under side of said sills, of a draw-bar arranged between said beams and provided at its rear end with a yoke containing a pair of followers and an interposed spring or springs, brackets of **Z**-shaped cross-section secured to said **Z**-beams and having their lower flanges provided with depending lips or stops, and side lugs or guides for said followers secured to the lower flanges of said brackets and confined between the lips of the brackets, substantially as set forth.

9. The combination with the sills or base-frame of the car-body and longitudinal **Z**-beams secured to the under side of said sills, of a draw-bar arranged between said beams and provided at its rear end with a yoke containing a pair of followers and an interposed spring or springs, brackets of **Z**-shaped cross-section secured to said **Z**-beams and having their lower flanges arranged on the under side of the bottom flanges of said **Z**-beams, and side lugs or guides for said followers secured to the under side of said **Z**-brackets, the lower flanges of said **Z**-brackets forming chafing-plates which protect the **Z**-beams from the wear of the followers, substantially as set forth.

10. The combination with the sills or base-frame of the car-body and longitudinal **Z**-beams secured to the under side of said sills, of a draw-bar arranged between said beams and provided at its rear end with a yoke containing a pair of followers and an interposed spring or springs, brackets of **Z**-shaped cross-section secured to said **Z**-beams and having their lower flanges arranged on the under side of the bottom flanges of said **Z**-beams, and extended inwardly beyond the inner edges of said bottom flanges, and side lugs or guides for said followers secured to said **Z**-brackets, substantially as set forth.

11. The combination with the sills or base-frame of the car-body, of a pair of **Z**-beams secured to the under side of said sills and forming platform-supports, a tie-plate connecting the lower flanges of said beams, and a draw-bar carry-iron secured to the under side of said tie-plate and abutting at its ends against the lower flanges of said **Z**-beams, substantially as set forth.

12. The combination with the sills or base-frame of the car-body, of side and center **Z**-beams secured to the under side of said sills and forming platform-supports, said side beams being of greater depth than said center beams, a tie-plate secured to the under side of the bottom flanges of said center beams and to the upper side of the bottom flanges

of the side beams, whereby the latter flanges
form stops on the under side of said tie-plate,
and a draw-bar carry-iron secured to said tie-
plate and abutting at its ends against said
5 stop-flanges, substantially as set forth.

13. The combination with the sills or base-
frame of the car-body, and metallic longitu-
dinal beams secured to the under side thereof
and forming platform-supports, of brackets
10 or bearings secured to the side of said metallic
beams, and a longitudinal eyebolt carrying
a safety-chain and guided in said brackets,
substantially as set forth.

14. The combination with the sills or base-
15 frame of the car-body and metallic longitu-
dinal beams secured to the under side thereof

and forming platform-supports, of a tie-plate
connecting the lower portions of said beams,
a bracket secured to the side of one of said
beams and having a lip which overlaps the rear 20
edge of said tie-plate, and an eyebolt carry-
ing a safety-chain and guided in said bracket
and having a spring which bears against the
rear side of said bracket, substantially as set
forth.

Witness my hand this 8th day of Decem- 25
ber, 1898.

WILLARD F. RICHARDS.

Witnesses:

JNO. J. BONNER,
CARL F. GEYER.