No. 700,265. Patented May 20, 1902.

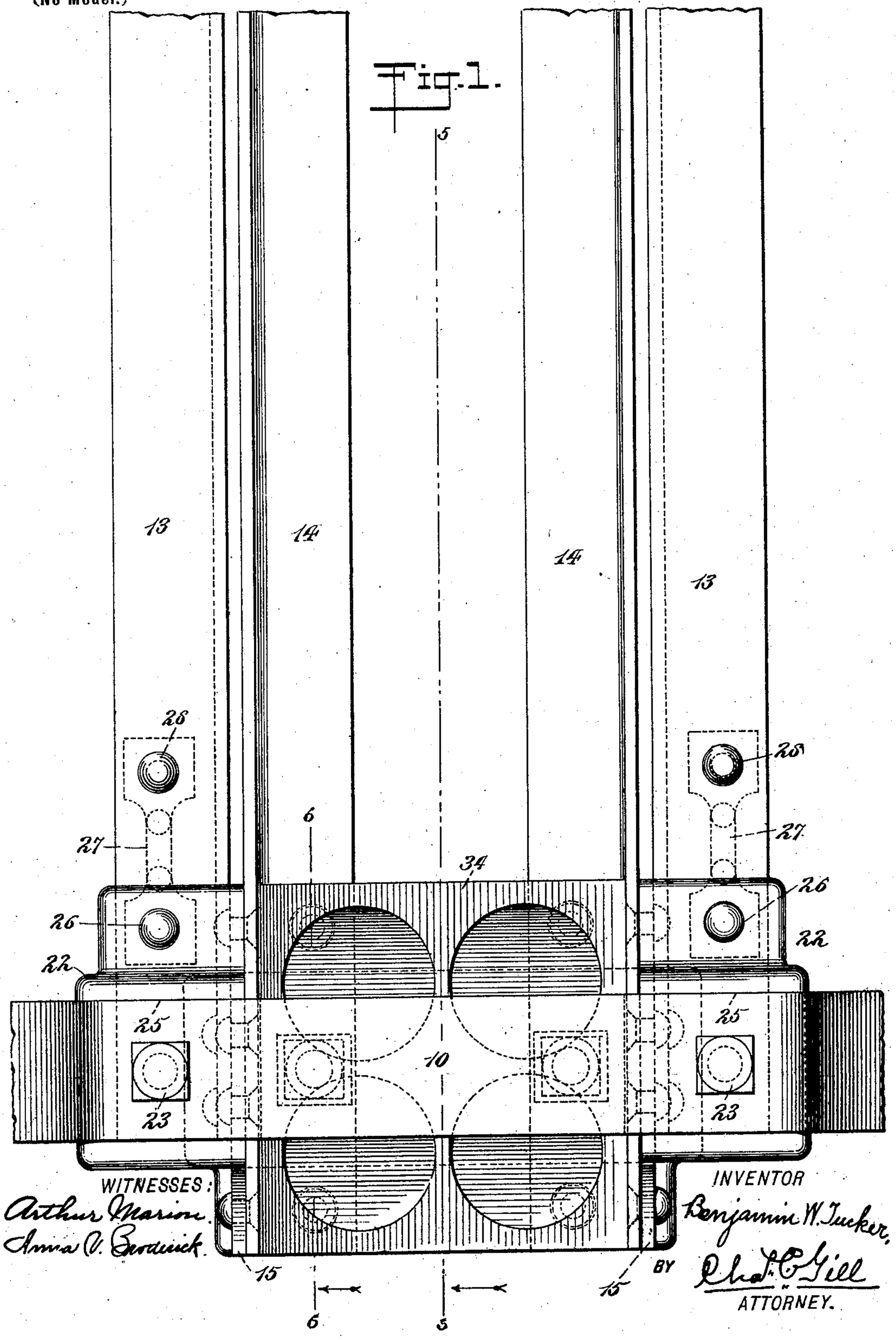
B. W. TUCKER.

CAR TRUCK.

(Application filed Mar. 19, 1902.)

(No Model.) 3 Sheets—Sheet 1.

Fig. 1.



WITNESSES:
Arthur Marion.
Anna C. Berdnick.

INVENTOR
Benjamin W. Tucker,
BY Chas. C. Gill
ATTORNEY.

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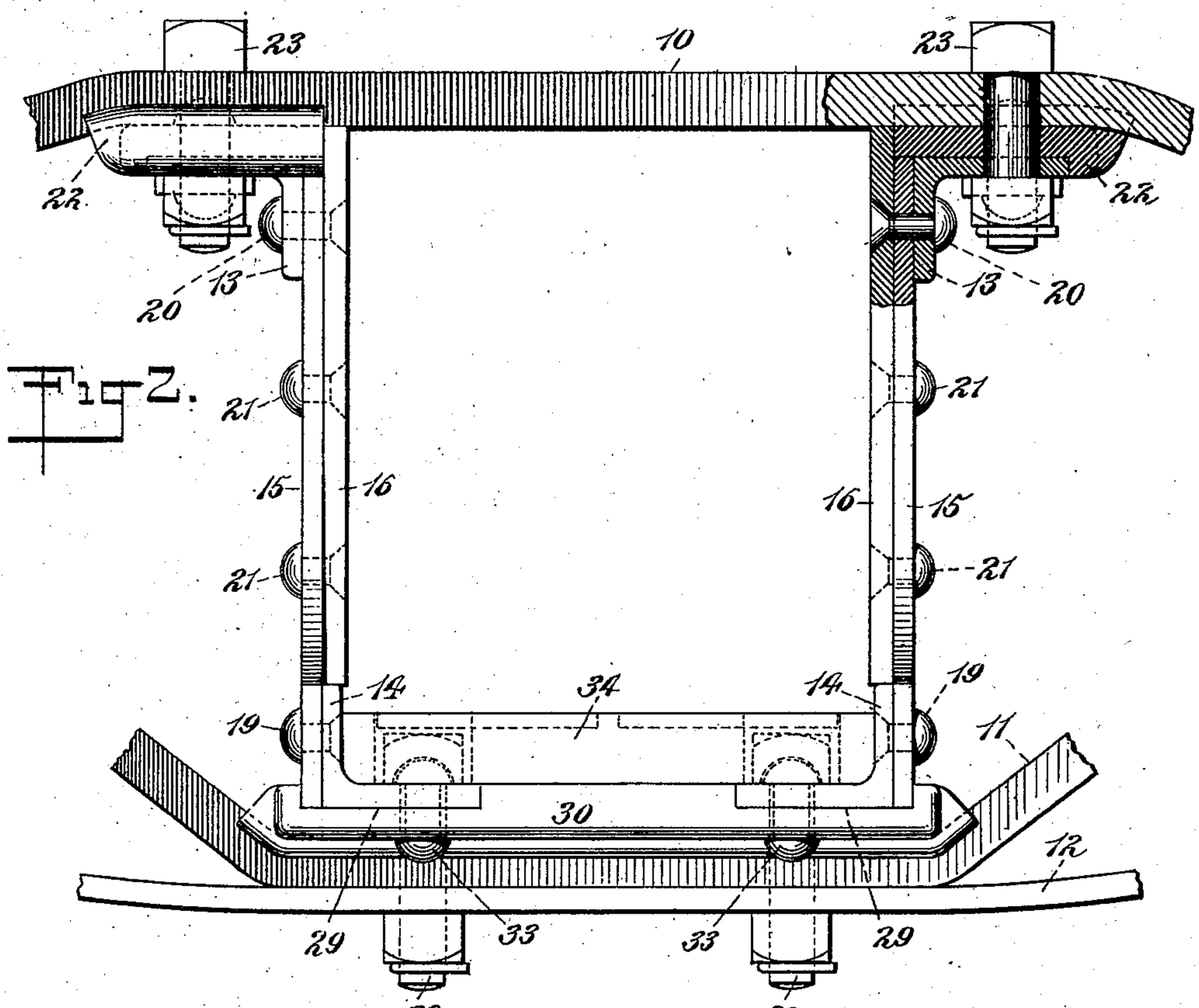

FIG. 2.

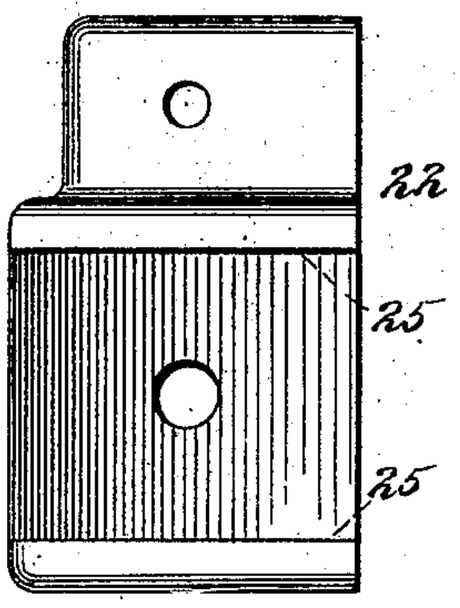

FIG. 3.

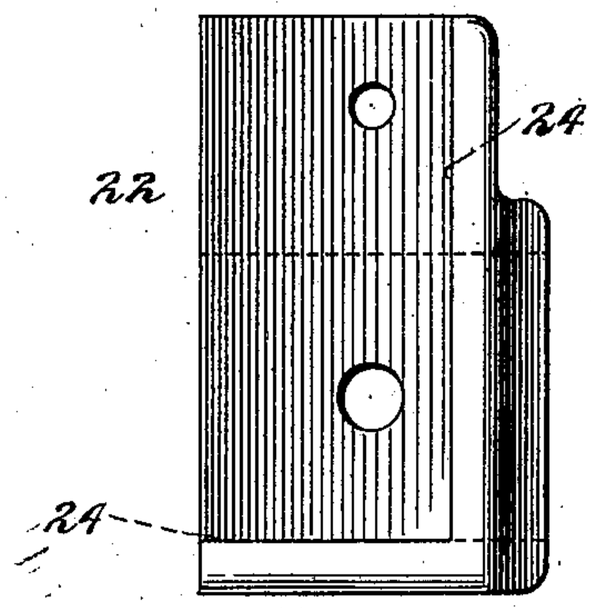

FIG. 4.

WITNESSES:
Arthur Marion.
Anna V. Broderick

INVENTOR
Benjamin W. Tucker.
BY
Chas. F. Gill
ATTORNEY

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B. W. TUCKER.

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(No Model.) 3 Sheets—Sheet 3.

Fig. 5.

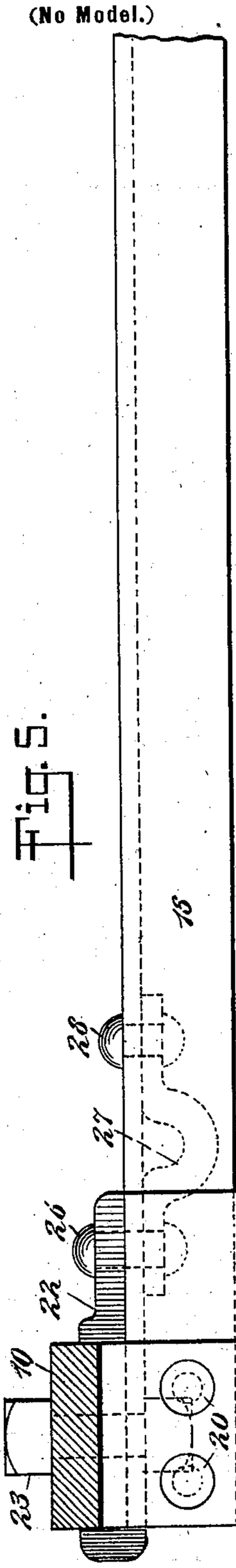
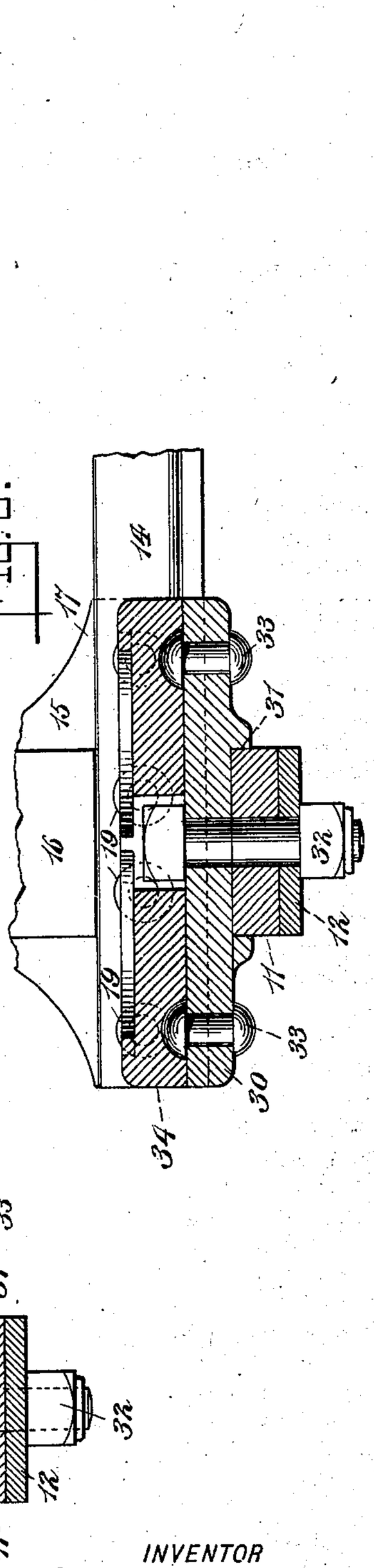


Fig. 6.



WITNESSES:

Arthur Marion.

Anna V. Broderick.

INVENTOR

Benjamin W. Tucker.

BY Chas. C. Gill.

ATTORNEY.

UNITED STATES PATENT OFFICE.

BENJAMIN W. TUCKER, OF NEWARK, NEW JERSEY, ASSIGNOR TO EDWARD CLIFF, OF NEWARK, NEW JERSEY.

CAR-TRUCK.

SPECIFICATION forming part of Letters Patent No. 700,265, dated May 20, 1902.

Application filed March 19, 1902. Serial No. 98,874. (No model.)

To all whom it may concern:

Be it known that I, BENJAMIN W. TUCKER, a citizen of the United States, and a resident of Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Car-Trucks, of which the following is a specification.

The invention relates to improvements in car-trucks; and it consists in the novel features and combinations of parts hereinafter described, and particularly pointed out in the claims.

The object of the invention is the production of a car-truck which while possessing desirable structural features in a general sense shall be capable of retaining its squareness or the true right-angular relation of its side frames and transom and adapted to permit the truck-wheels to follow the customary irregularities of the track-rails, the transom being capable of a limited torsional action, whereby the wheels at both sides of the truck may maintain their relation to the track-rails at points where, for illustration, the rail at one side of the track may be on a lower plane than the rail at the opposite side thereof.

The invention and satisfactory means for carrying the same into effect will be fully understood from the detailed description hereinafter presented, reference being had to the accompanying drawings, in which—

Figure 1 is a top view of a portion of a truck-frame constructed in accordance with and embodying the invention. Fig. 2 is a side elevation, partly in section, of a portion of the truck-frame. Fig. 3 is a detached top view of one of the caps for aiding in securing the end of the transom to the side frame. Fig. 4 is a bottom view of same. Fig. 5 is a vertical section of the truck on the dotted line 5 5 of Fig. 1, and Fig. 6 is a like section of a portion of same on the dotted line 6 6 of Fig. 1.

I illustrate in the drawings only so much of a car-truck of the known diamond type as is necessary for a full understanding of my invention applied thereto or utilized in connection therewith, the axle-boxes, wheels, bolster, bolster-springs, and other features incidental to all car-trucks being omitted, since my invention pertains especially to the transoms and features used in connection therewith at the center of the side frames of the truck. The side frames of the truck are duplicates of each other, and hence only one side frame is represented in the drawings.

In the drawings, 10 designates the upper arch-bar, 11 the inverted or lower arch-bar, and 12 the tie-bar, of the customary side frame of a diamond truck.

The side frames are connected by transoms comprising the upper angle-iron beams 13 13 and lower angle-iron beams 14 14, and these beams 13 and 14 at each side of the center of the side frame are connected together between the arch-bars 10 11 by vertically-disposed plates 15, upon the facing sides of which are secured the plates 16, the latter strengthening the structure and serving as guiding and rubbing surfaces for the bolster. (Not shown.)

The horizontal flanges of the upper beams 13 extend outwardly toward the ends of the truck, and the horizontal flanges of the lower beams 14 extend inwardly toward the center of the truck, and the connecting-plates 15 are secured against the faces of the vertical flanges of said beams 13 14, said plates 15 having the laterally-projecting upper and lower extensions 17, engaging the angle-iron beams 13 14 for a certain distance inward from the side frames of the truck. Intermediate the extensions 17 the plates 15 are cut out on the line of the arc of a circle, as at 18, this curved line extending from the lower edge of the upper beam 13 to the upper edge of the lower beam 14.

At each side of the center of the side frames of the truck the lower beam 14 is secured to the plate 15 by means of rivets or bolts 19, and the upper beam 13, plate 15, and plate 16 are secured together by means of rivets or bolts 20, while intermediate the upper and lower beams 13 14 the plate 15 and plate 16 at each side of the center of the side frame are additionally secured together by rivets or bolts 21. The end portions of the horizontal flanges or members of the beams 13 are fastened to the arch-bar 10 by means of the cast caps 22 and bolts 23, the latter passing vertically through said caps 22, the horizontal flanges of the beams 13, and the arch-bar 10. The cast caps 22 are recessed on their upper side to pass upward upon the lower side of the arch-bar 10, and said caps are recessed on their lower side to receive the end portions

of the horizontal flanges or members of the upper beams 13, gibs or shoulders 24 being formed on the lower side of the caps 22 to engage the outer edges of the beams 13, while the recesses on the upper side of said caps result in the formation of gibs or shoulders 25 to engage the opposite edges of the arch-bar 10, said shoulders 25 extending at right angles to the shoulders 24, and thus aiding in holding the truck-frame perfectly square. The caps 22 extend laterally inward beyond the side frames, this portion of the caps covering the upper edge of the upper plate extensions 17 and being fastened to the beams 13 by means of the rivets or bolts 26. The rivets or bolts 26 are also used to take one end of the usual straps 27 for the brake-hangers, (not shown,) the other end of said straps being secured by the rivets or bolts 28. The horizontal flanges or members of the lower beams 14 and the lower edges of the plates 15 are seated within recesses 29, formed in a cast base-block 30, which is recessed, as at 31, upon its lower side to fit upon the central level portion of the arch-bar 11.

The tie-bar 12, arch-bar 11, cast base-block 30, and beams 14 are securely fastened together by means of the bolts 32, which pass through apertures in all of said parts. The base-block 30 and beams 14 are also securely fastened together at points at opposite sides of the arch-bar 11 by means of rivets or bolts 33.

The shoulders formed at the edges of the recesses 29 in the base-block 30 extend at right angles to the shoulders formed at the edges of the recess 31 in said block, and said shoulders by their engagement with the transoms and arch-bar 11 materially aid in keeping the truck-frame square.

Upon the base-block 30 is arranged the socket-plate 34, containing seats for the usual springs (not shown) to receive the ends of the bolster. (Not shown.) The lower side of the socket-plate 34 is recessed to pass over the heads of the bolts 32 33, said heads being thereby enabled to center said plate 34 upon the base-block 30.

The upper and lower angle-bar beams 13 14, connected together at their end portions and secured to the upper and lower arch-bars of the side frames of the truck, result in the production of a truck-frame of great simplicity and durability and one capable of preserving its squareness of form or the true right angularity of the side frames with the transoms, and this is a feature of great importance, since one of the great objections to many truck-frames is their liability to lose their squareness. Another feature of importance due to the present invention is that the upper and lower angle-bar beams while securely connected together at their end portions are separated along the line of their length between the side frames of the truck, as illustrated more clearly in Fig. 5—that is to say, that the vertical webs or flanges of the upper beams 13 are separated from the vertical webs or flanges of the lower beams 14—whereby the space between the upper and lower beams, as shown in Fig. 5, is secured and whereby also the truck-frame when in use may along the transoms be permitted to have a limited twisting or torsional action without disturbing the means whereby the ends of the transoms are secured to the side frames, the result being that the truck-wheels at the opposite sides of the truck may at all times preserve their relation to the track-rails, this function being one I have sought to attain by means of my invention for the purpose of overcoming the objection to many of the rigid truck-frames due to the wheels at the opposite sides of the truck being unable to remain on the track-rails when, for illustration, the truck is passing a point on the road where one track-rail is on a lower plane than the other track-rail. The truck-frame of the construction herein presented while being a rigid frame is nevertheless capable of a limited torsional action in the transoms, whereby the wheels are permitted to at all times remain upon the rails without disturbing the rigidity of the truck or straining its parts. It is to be observed that the horizontal flanges of the upper angle-iron beams 13 extend outward toward the ends of the truck, while the horizontal flanges of the angle-iron beams 14 extend inward, and this is a feature of importance in that by reason thereof the torsional action hereinbefore referred to is permitted to an advantageous degree. The fact that the horizontal flanges of the beams 13 extend outward and the horizontal flanges of the beams 14 extend inward is also of advantage, since by reason thereof the upper beams 13 leave a clear space between the guide-plates 16 for the bolster, and the lower beams 14 are not interfered with by the lower arch-bar 11, but are so disposed that they may be securely fastened to the base-block 30, tie-bar 12, and lower arch-bar 11. The horizontal flanges of the upper angle-iron beams 13 also afford supports for the hangers 27 for the brake-rigging.

While I regard the construction presented as a highly satisfactory embodiment of the invention, I do not wish to limit myself to all of the details of form and construction shown, since it is obvious that some of the details shown may be altered or modified within the scope of my invention. For illustration, the socket-plate 34 contains seats for four coiled springs to receive the bolster; but I do not wish to limit this invention to the employment of the plate 34 having the four seats for the springs, since a greater or smaller number of springs may be employed, or elliptic in lieu of coiled springs may be employed; nor do I in every instance desire this invention limited to the employment of strictly angle-iron transom-beams 13 14, since a part of my invention would be present if the vertical flanges of the beams 13 14 were in part omitted and substantially only the horizontal

portions thereof employed, these horizontal portions being arranged, as shown in the drawings, with the inner edges of the upper beams about in line with the outer edges of the lower beams, said arrangement omitting the vertical portions of the beams 13 14, resulting in a desirable form of truck, though not so desirable as when the transom-beams are of angle-irons, with the ends of the beams 13 14 connected together and to the side frames with a space left between those portions of the vertical flanges of said beams disposed intermediate the side frames, said vertical flanges being as nearly as possible in vertical line, while the horizontal flanges of the beams 13 14 project in opposite directions, as shown.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a car-truck, the angle-iron upper and lower transom-beams 13, 14, secured at their ends to the side frames with a free space left intermediate those portions of the vertical flanges of said beams disposed intermediate the side frames, the horizontal flanges of said upper and lower transoms being projected in opposite directions; substantially as set forth.

2. In a car-truck, the angle-iron upper and lower transom-beams 13, 14, secured at their ends to the side frames with a free space left intermediate those portions of the vertical flanges of said beams disposed intermediate the side frames, the horizontal flanges of said upper and lower transoms being projected in opposite directions, combined with plates interposed between the upper and lower bars of said side frames and secured to the vertical flanges of said beams; substantially as set forth.

3. In a car-truck, the side frames having the upper and lower bars, the angle-iron upper and lower transom-beams 13, 14, secured at their ends to said bars, and outer plates 15 secured to the vertical flanges of said beams intermediate said bars, combined with the inner plates 16 affording proper surfaces for the bolster and connected by rivets or bolts with said outer plates; substantially as set forth.

4. In a car-truck, the side frames having the upper and lower bars, the angle-iron upper and lower transom-beams 13, 14, secured at their ends to said bars, and plates secured to and connecting the vertical flanges of said beams, combined with the caps 22 for aiding in securing the beams 13 to said upper bars, and bolts 23 passing through said caps, said upper bars and said transoms, said caps being recessed at their upper side to pass upon the edges of said upper bar and recessed at their lower side to receive the ends of said beams 13; substantially as set forth.

5. In a car-truck, the side frames having the upper and lower bars, and the angle-iron upper and lower transom-beams 13, 14, secured at their ends to said bars, combined with the base-block 30 recessed at its upper side to receive the said beams 14 and at its lower side to engage the lower bar of the side frame, and bolts 32 passing through said lower bar, said base-block and said beams 14; substantially as set forth.

6. In a car-truck, the side frames having the upper and lower bars, and the angle-iron upper and lower transom-beams 13, 14, secured at their ends to said bars, combined with the base-block 30 recessed at its upper side to receive the said beams 14 and at its lower side to engage the lower bar of the side frame, bolts 32 passing through said lower bar, base-block and beams 14, and the plate 34 mounted upon said base-block and affording sockets for the bolster-springs, said plate 34 being recessed to receive the heads of said bolts 32, the latter being thereby enabled to aid in securing said plate in position; substantially as set forth.

7. In a car-truck, the angle-iron upper and lower transom-beams 13, 14, secured at their ends to the side frames with a free space left intermediate those portions of the vertical flanges of said beams disposed intermediate the side frames, the horizontal flanges of said upper and lower transoms being projected in opposite directions, combined with plates interposed between the upper and lower bars of said side frames and secured to the vertical flanges of said beams, said plates having extensions projecting inward laterally beyond the side frames and secured to the vertical flanges of said transom-beams; substantially as set forth.

8. In a car-truck, the angle-iron upper and lower transom-beams 13, 14, secured at their ends to the side frames with a free space left intermediate those portions of the vertical flanges of said beams disposed intermediate the side frames, the horizontal flanges of said upper and lower transoms being projected in opposite directions, and the ends of said free space being curved and adjacent to said side frames; substantially as set forth.

9. In a car-truck, the side frames having the upper and lower bars, parallel upper transom-beams secured at their ends to said upper bars and having horizontal members projecting toward the ends of the truck, and parallel lower transom-beams secured at their ends to the lower bars of the side frames and having horizontal members projecting inward toward the transverse center of the truck, the inner edges of the upper beams being about on a vertical line with the outer edges of the lower beams, combined with plates connecting the said upper and lower transom-beams at their end portions at each side of the center of the side frames, leaving a clear space for the bolster and its parts; substantially as set forth.

Signed at New York, in the county of New York and State of New York, this 17th day of March, A. D. 1902.

BENJAMIN W. TUCKER.

Witnesses:

CHAS. C. GILL,

ARTHUR MARION.