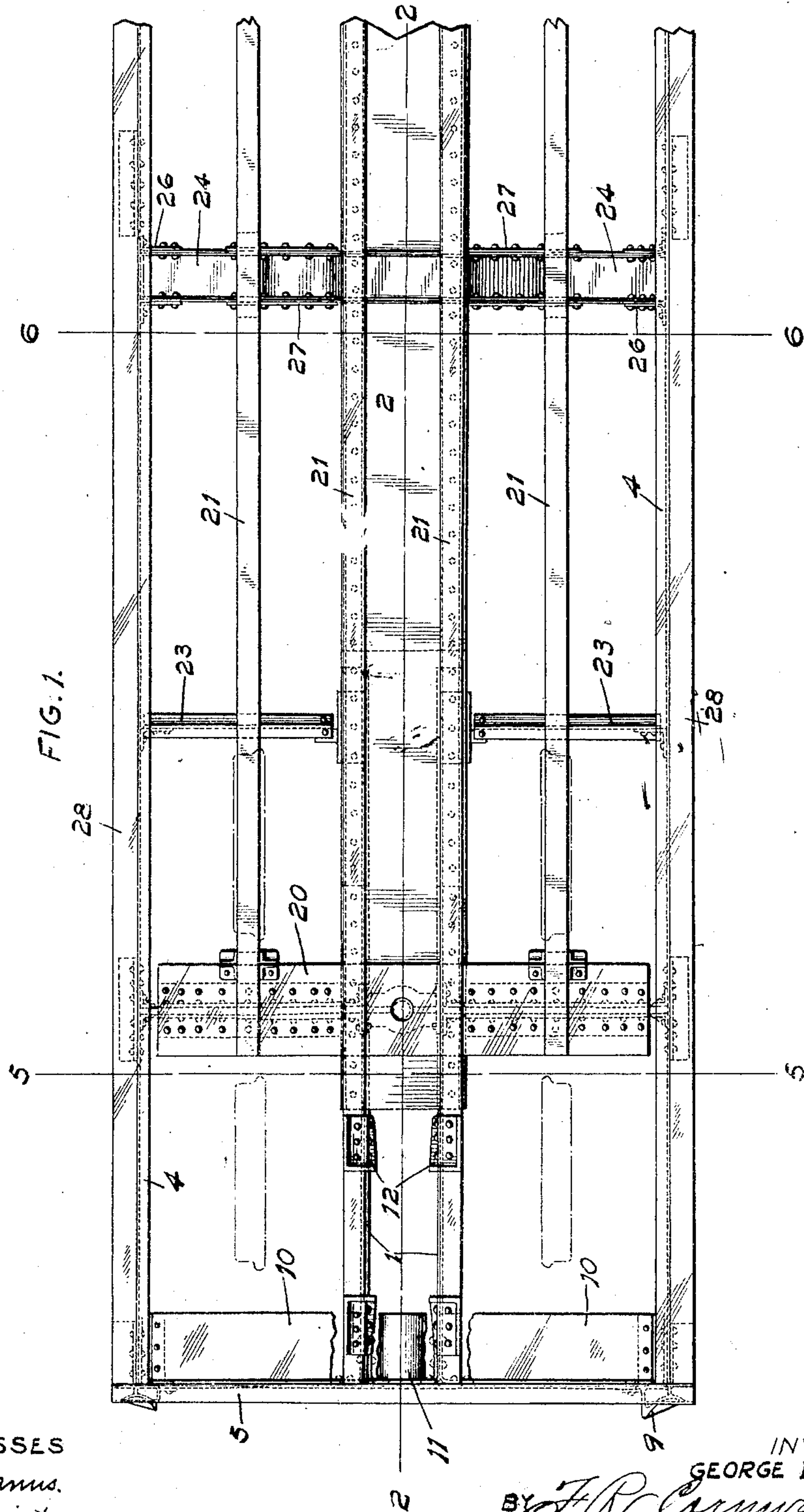


998,697.

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CAR UNDERFRAME.
APPLICATION FILED DEC. 2, 1909.

Patented July 25, 1911

4 SHEETS—SHEET 1.



WITNESSES
Wm. J. Jannus.
E. W. Harrington.

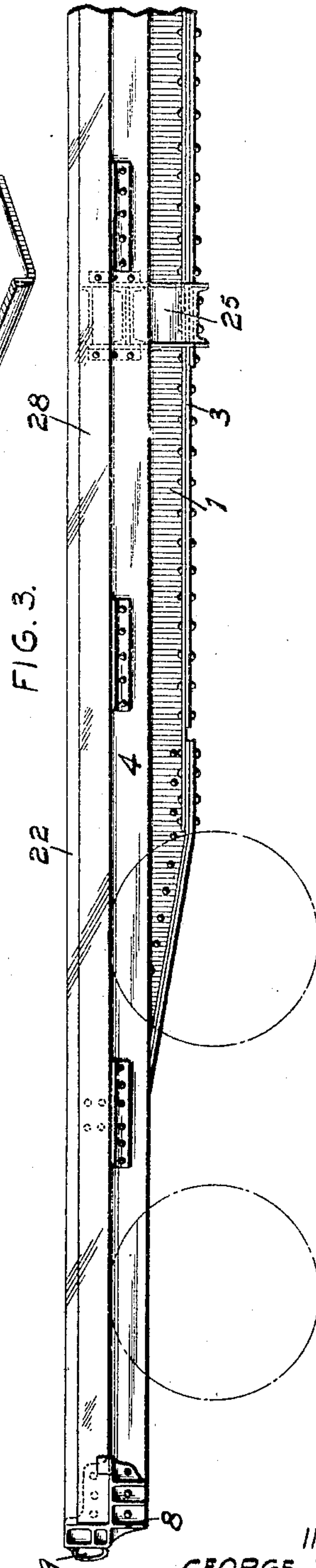
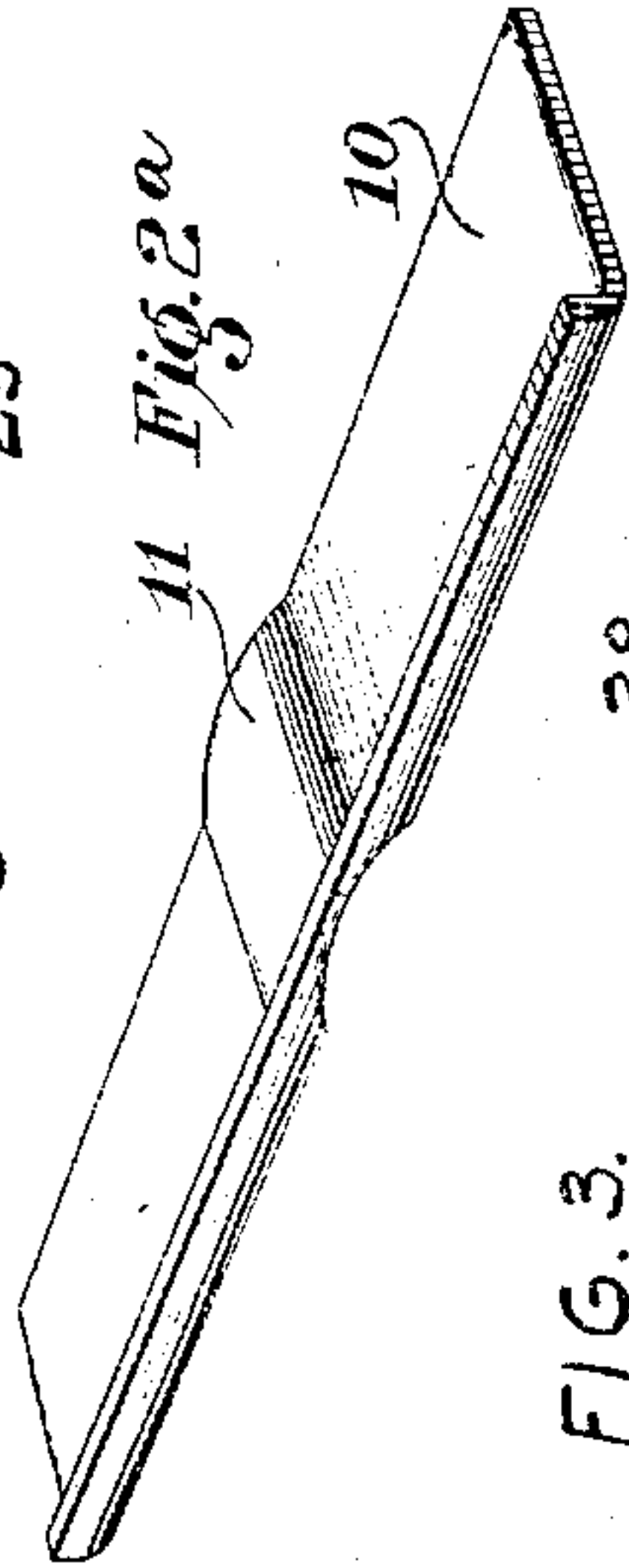
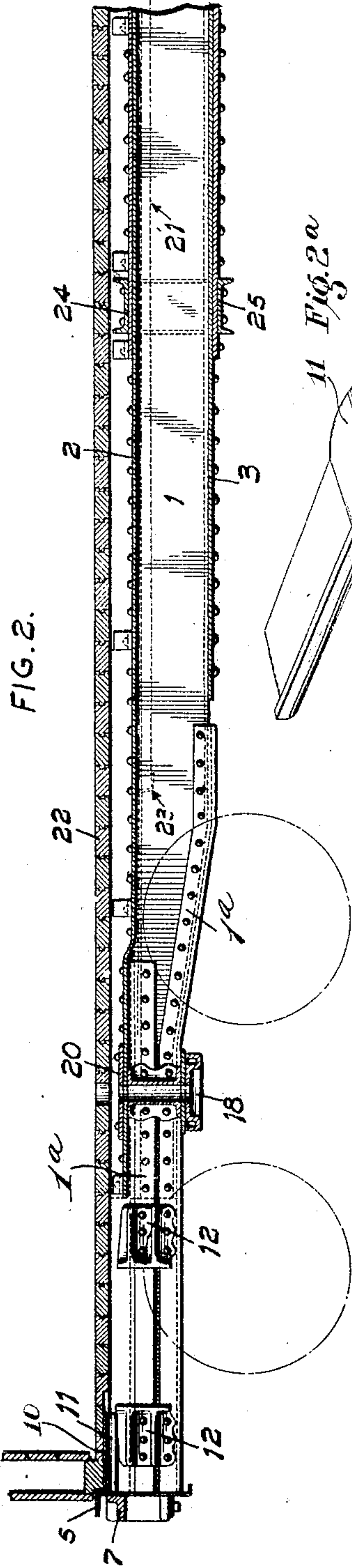
INVENTOR
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4 SHEETS—SHEET 2.



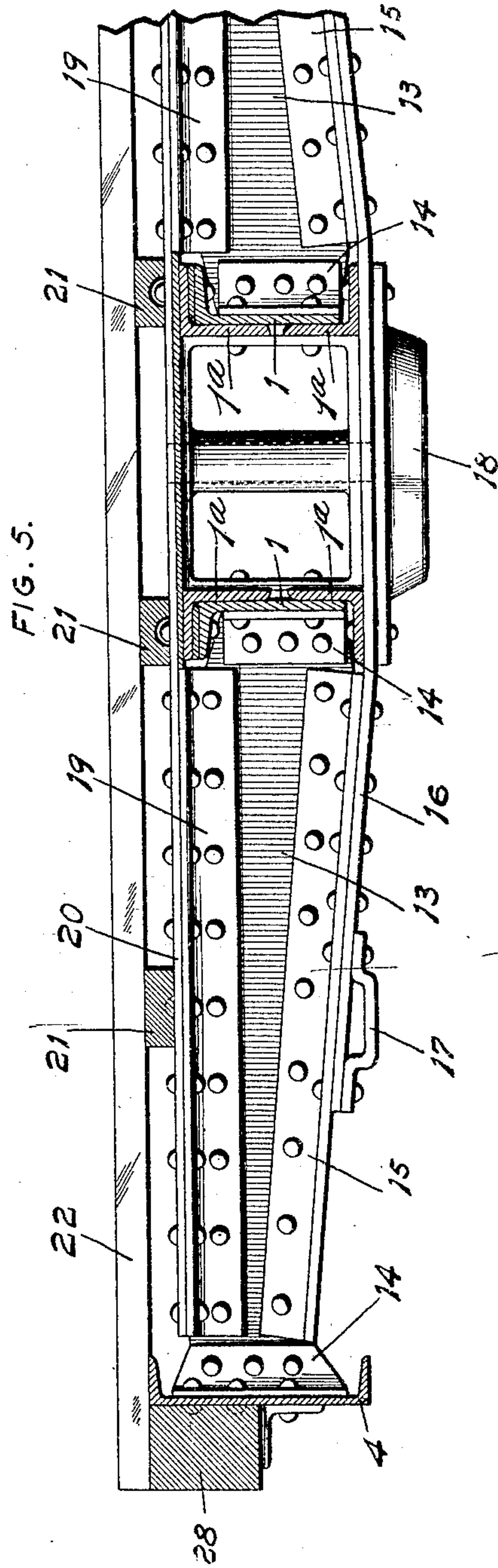
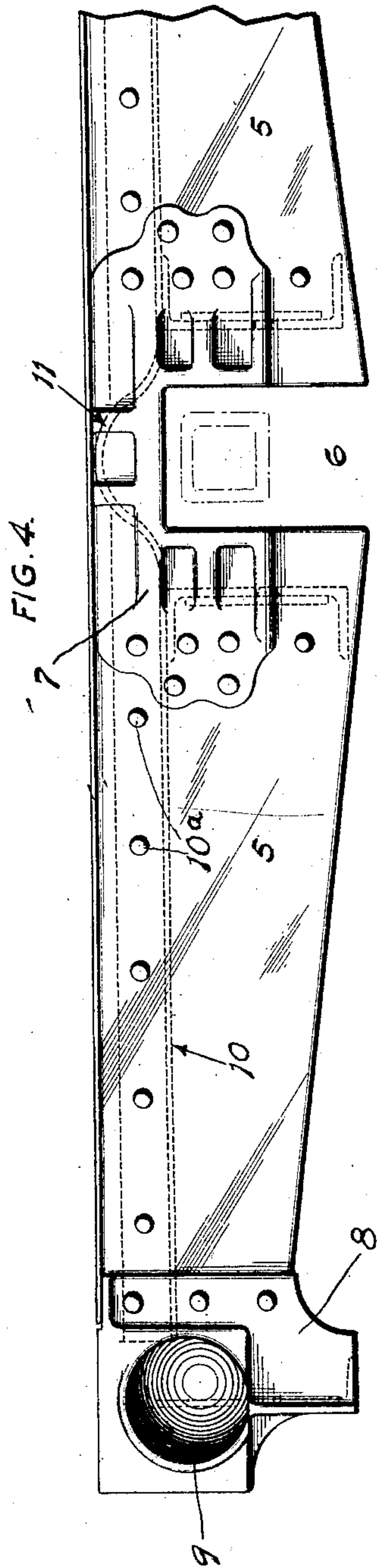
WITNESSES
Wm. James.
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4 SHEETS—SHEET 3.



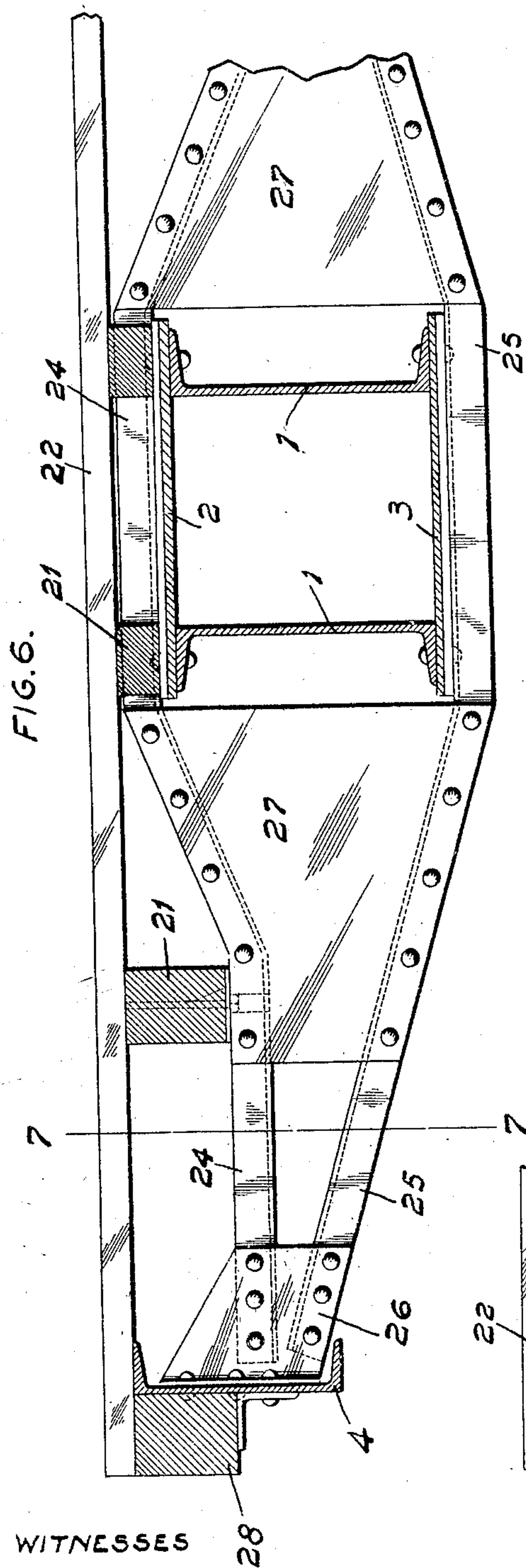
WITNESSES
Am. Janus.
E. M. Harrington

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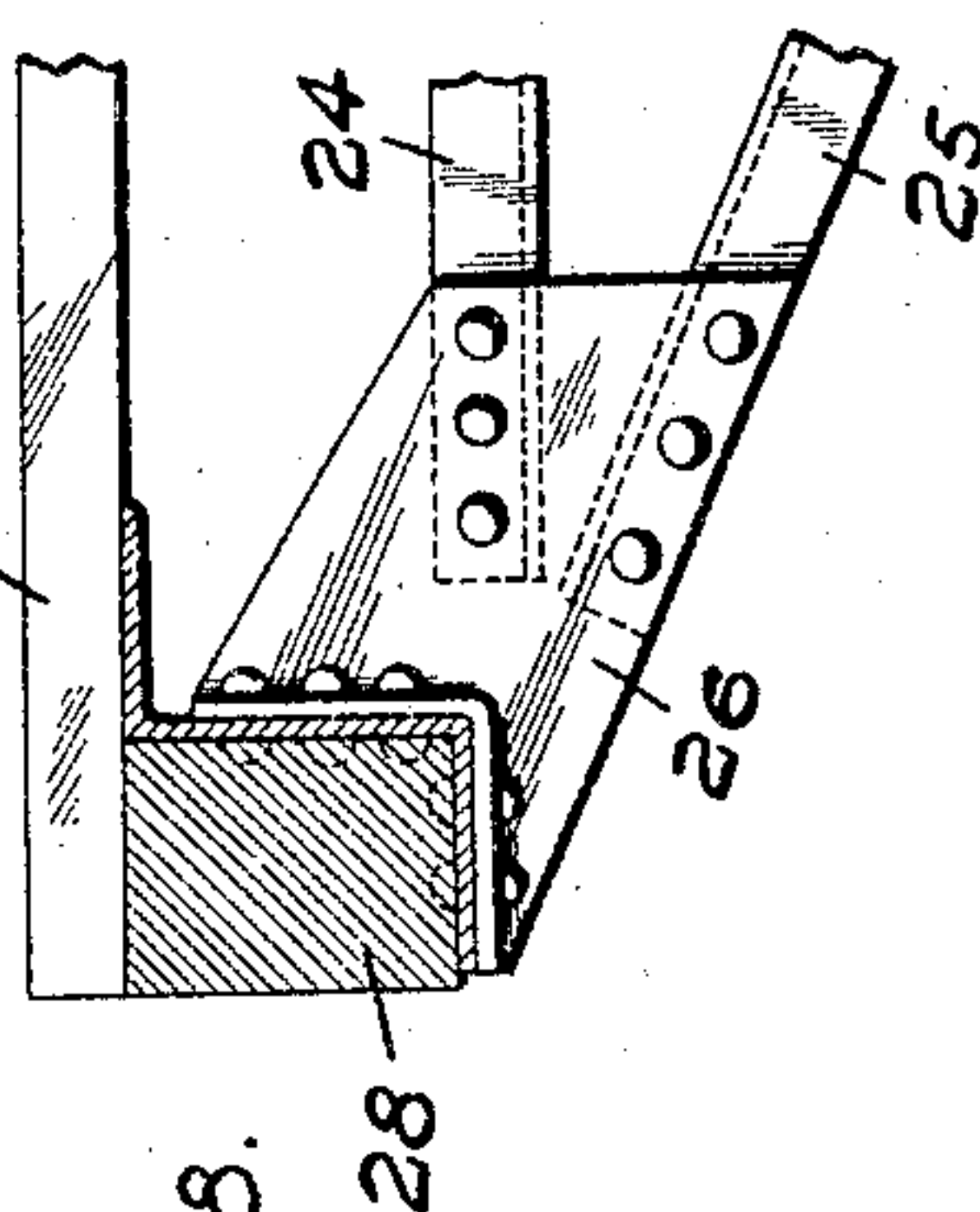
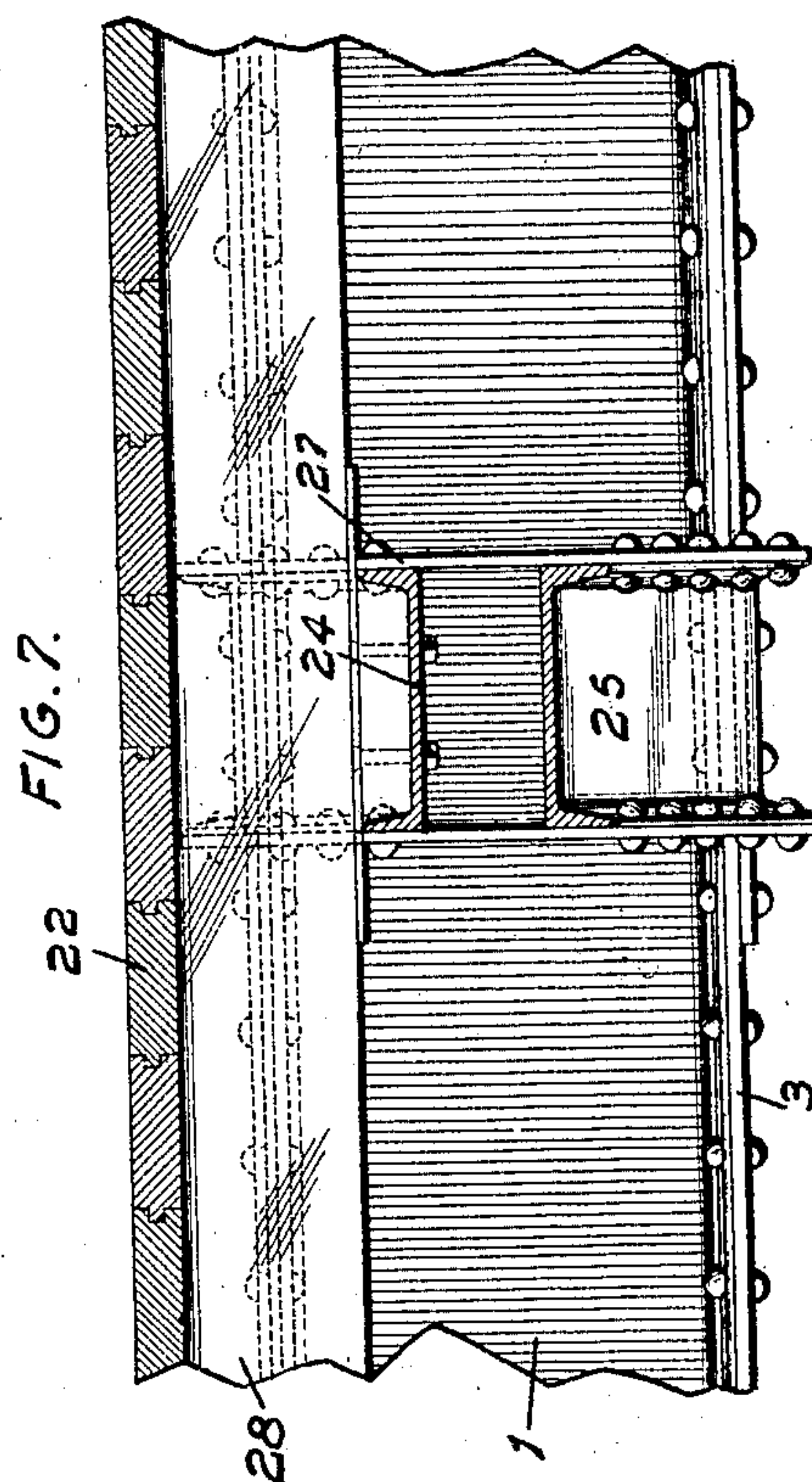
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Patented July 25, 1911
4 SHEETS—SHEET 4.



WITNESSES
J. M. Janus.
E. M. Harrington.



INVENTOR
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UNITED STATES PATENT OFFICE.

GEORGE I. KING, OF MIDDLETOWN, PENNSYLVANIA, ASSIGNOR TO AMERICAN CAR & FOUNDRY COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW JERSEY.

CAR-UNDERFRAME.

998,697.

Specification of Letters Patent.

Patented July 25, 1911.

Application filed December 2, 1909. Serial No. 530,957.

To all whom it may concern:

Be it known that I, GEORGE I. KING, a citizen of the United States, residing at Middletown, Pennsylvania, have invented a certain new and useful Improvement in Car-Underframes, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a plan view of the end portion of my improved construction; Fig. 2 is a vertical section taken on the line 2—2 of Fig. 1; Fig. 2^a is a detail view of the gusset plate which is connected to the end sill; Fig. 3 is a side elevation of the end portion of my improved underframe; Fig. 4 is an elevation of one of the end sills of my improved underframe; Fig. 5 is an enlarged transverse section taken on the line 5—5 of Fig. 1; Fig. 6 is an enlarged transverse section taken on the line 6—6 of Fig. 1; Fig. 7 is a vertical section taken on the line 7—7 of Fig. 6; Fig. 8 is a detailed section illustrating a modified form of the connection between the end of the cross frame or bearer and the side sill.

My invention relates to a car underframe particularly intended for use in connection with gondolas, flat cars and box cars, and my improved construction consists essentially of a box girder center sill, side and intermediate sills, body, bolsters and cross bearers or frames, all of which parts are constructed of ordinary rolled shapes and plain plates cut and bent as desired, thus materially reducing the cost of construction of underframes as compared to frames utilizing special shapes or castings.

My improved construction also provides for the ready repair of the underframe, should parts thereof become broken or unfit for service.

In my improved construction of underframe, the side sills and cross bearers are constructed and arranged so that the greater portion of the total load upon the underframe, and the stress thereof, is transferred to and carried by the box girder center sill.

To the above purpose my invention consists in certain novel features of construc-

tion and arrangement of parts hereinafter more fully described and claimed.

The central member of the underframe or the box girder center sill comprises a pair of sills 1, preferably in the form of channels arranged back to back and spaced apart and extending continuously from one end of the frame to the other. The bottom flanges and lower portions of these channels are cut away for a suitable distance at each end to provide proper space for the bolsters, and arranged above and below the sills are top and bottom plates 2 and 3, which are riveted to the flanges of said sills, thus forming the box girder.

The cut-away end portions of the channels 1 are reinforced at both top and bottom by members 1^a preferably in the form of angle bars the vertical legs of which are riveted to the webs of said channels 1.

The ends of the bottom plate 3 terminate adjacent the points where the lower flanges of the sills 1 are cut away and the ends of the top plate 2 terminate outside the points occupied by the body bolsters.

4 designates the side sills of the underframe which are preferably in the form of channels arranged with their flanges projecting inward toward the longitudinal center of the frame and the upper flanges of said side sills occupy a plane slightly above the top of the box girder.

The ends of the box girder center sill and side sills 4 are connected in any suitable manner to transversely disposed end sills 5, preferably Z-shape in cross section, which end sills are provided at their centers with openings 6, which receive the draw bars. Fixed on the outer faces of these end plates above the draw bar openings therein are cast metal striking plates 7.

Angular plates 8 of malleable metal and provided with push pole pockets 9 are fixed to the ends of each end sill and connect the same with the ends of the side sills.

Fixed to the inner face and upper portion of each end sill 5 and to the ends of the side sills 4, is a horizontally disposed gusset plate 10, which materially reinforces the end sill and the central portion of this gusset plate is bent upward as designated by 11 in order to clear the draw bar and

draft gear arranged between the ends of the channels 1 forming the center sills.

Rigidly fixed to the inner faces of the channels 1 between the end sills and the ends of the top plate 2 are draft lugs 12, preferably of cast steel, to form shoulders against which the draft gear or rigging engages.

The body bolsters of my improved underframe are of the built-up type, each comprising a pair of vertically disposed web plates 13 arranged between the channels 1 and side sills 4, and the ends of these plates are fixed to the center and side sills by means of angle plates 14.

Fixed to the lower portion of each plate and on opposite sides thereof, is a pair of angle bars 15 and fixed to the horizontal legs of these angle bars and extending beneath the center sill is a tie plate 16.

The upper members 17 of side bearings are fixed in any suitable manner to the ends of this plate 16 and fixed to the under side of the center of said plate is the upper member 18 of a center bearing.

Fixed to the upper portions of the web plates 13 and on opposite sides thereof are angle bars 19 and fixed to the horizontal legs of these angle bars is a tie plate 20, which extends above the box girder.

The ends of intermediate sills 21, preferably of wood, bear upon the tie plates 20 and form a base to which the floor 22 of the car is fixed.

Transversely disposed Z-bars 23 are arranged between the center sill and the side sills at suitable points throughout the length of the frame and which Z-bars form supports for the intermediate sills 21.

Cross bearers or frames are arranged on my improved underframe between the body bolsters and preferably at such points as will divide the space between said body bolsters into three equal parts. Each of these cross bearers or frames comprises a pair of channels 24 and 25 arranged above and below the center sill and the ends of said channels being connected to the side sills 4 by means of angle plates 26. The upper channel 24 is bent downward over the upper corners of the box girder in order to provide sufficient space for the intermediate sills 21.

Web plates 27 have their upper and lower edges fixed to the flanges on the sides of the channels 24 and 25, and thus a cantaliver cross frame is provided which is comparatively simple in construction and which forms an effective support and connection between the central portions of the side sills and the central portion of the girder.

28 designates auxiliary side sills of wood, which are fixed upon the outer faces of the side sills 4 in any suitable manner. The tops of said auxiliary sills 28 occupy the same horizontal plane with the tops of the inter-

mediate sills 21 and said auxiliary sills serve as supports to which the outer ends of the floor boards are attached.

In Fig. 8, I have shown a side sill which is Z-shape in cross section and which form of sill can be advantageously employed in some instances.

It will be noted that the plate 10 is flanged upwardly along its outer edge, and this upwardly disposed flange is secured by the rivets 10^a to the web of the end sill. Also the angles 1^a extend rearwardly of the bolster, the bottom angle 1^a extending rearwardly to the deepest portion of the center sills, as shown in Figs. 2 and 3.

An underframe of my improved construction is comparatively simple, is made up of ordinary commercial shapes and plain plates, which can be readily and cheaply obtained, and said underframe is so constructed as to be easily and cheaply repaired when necessary. By providing the intermediate sills and auxiliary side sills of wood the floor boards can be readily placed in position upon the underframe without any machine work or cutting away on the under side.

I claim:

1. In a car underframe of the class described, the combination with a flanged end sill, of a horizontally disposed gusset plate fixed to the inner face of said end sill, and the central portion of which gusset plate is bent upward.

2. In a car underframe of the class described, the combination with a flanged end sill, of a horizontally disposed gusset plate fixed to the inner face of said sill, the ends of which gusset plate are fixed to the side sills of the underframe, and the central portion of which gusset plate is bent upward.

3. In a car underframe, the combination with an end sill provided at its center with an opening, of a horizontally disposed gusset plate fixed to the inner face of the end sill, and the central portion of which gusset plate is bent upward into a plane above the opening.

4. In car construction a gusset-plate for reinforcing the end sill, the same being arched over the draft rigging.

5. In car construction, the combination of an end sill, a gusset plate secured thereto, said gusset plate being arched over the draft rigging.

6. In car construction, the combination of an end sill, draft sills secured thereto, a gusset plate for reinforcing the end sill, said gusset plate being arched over the space between the draft sills.

7. In car construction, the combination of a flanged end sill, a flanged gusset plate secured thereto, said gusset plate being arched at the center over the space to be occupied by the draft rigging.

8. In car construction, a bolster and end

sill, a center sill member whose web extends outwardly beyond the bolster, flanged members secured to said end sill and to said web member and forming a draft sill, the said draft sill flanged members extending beyond the bolster and forming tension and compression flanges for the center sill member.

In testimony whereof I hereunto affix my signature in the presence of two witnesses, this 24th day of November, 1909.

GEORGE I. KING.

Witnesses:

G. A. BAUSMAN,
H. B. BAUMBACH.