

No. 757,110.

PATENTED APR. 12, 1904.

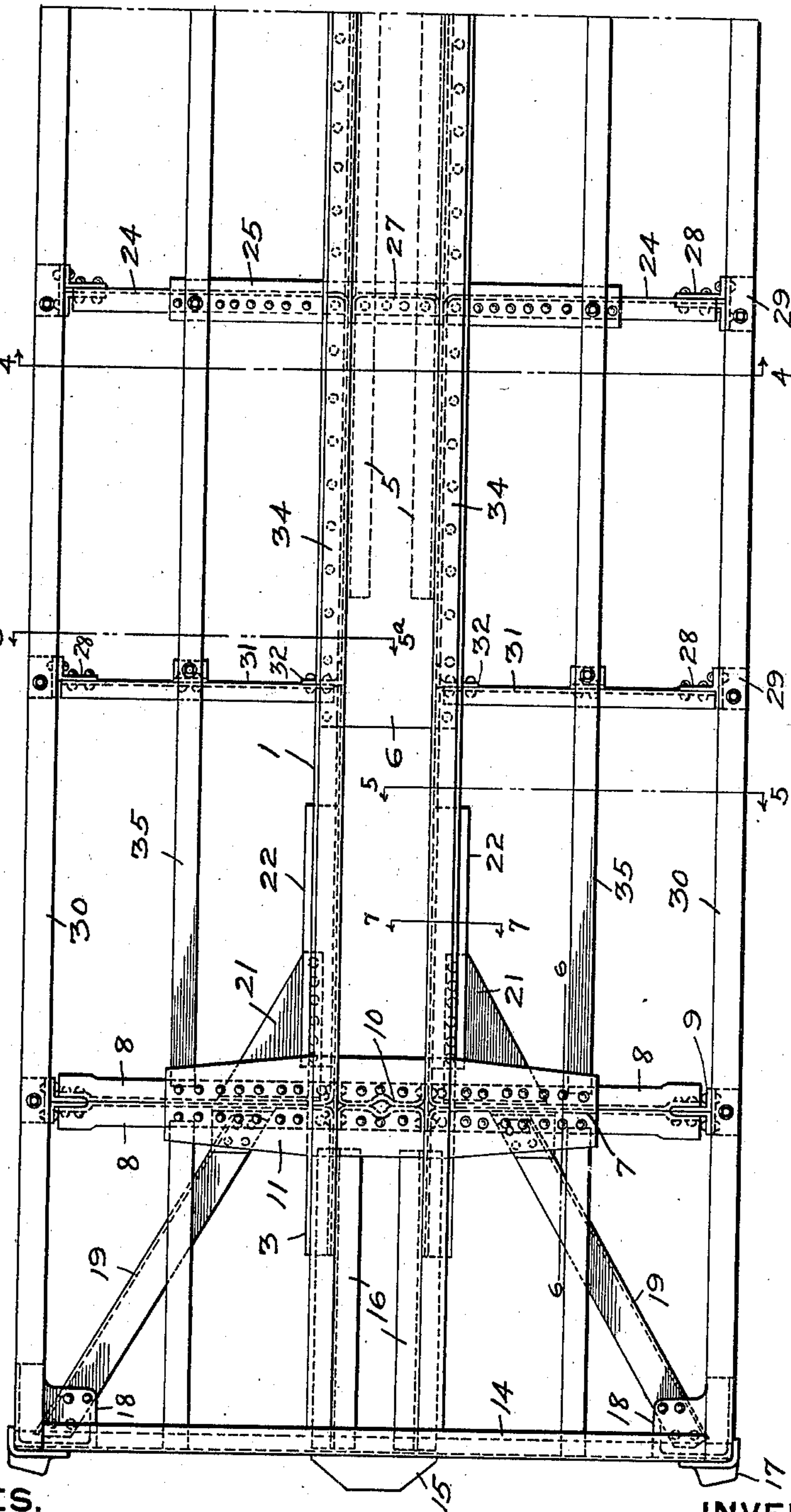
J. M. HANSEN.
RAILWAY CAR UNDERFRAME.

APPLICATION FILED SEPT. 28, 1903.

NO MODEL.

4 SHEETS—SHEET 1.

FIG. 1



WITNESSES.

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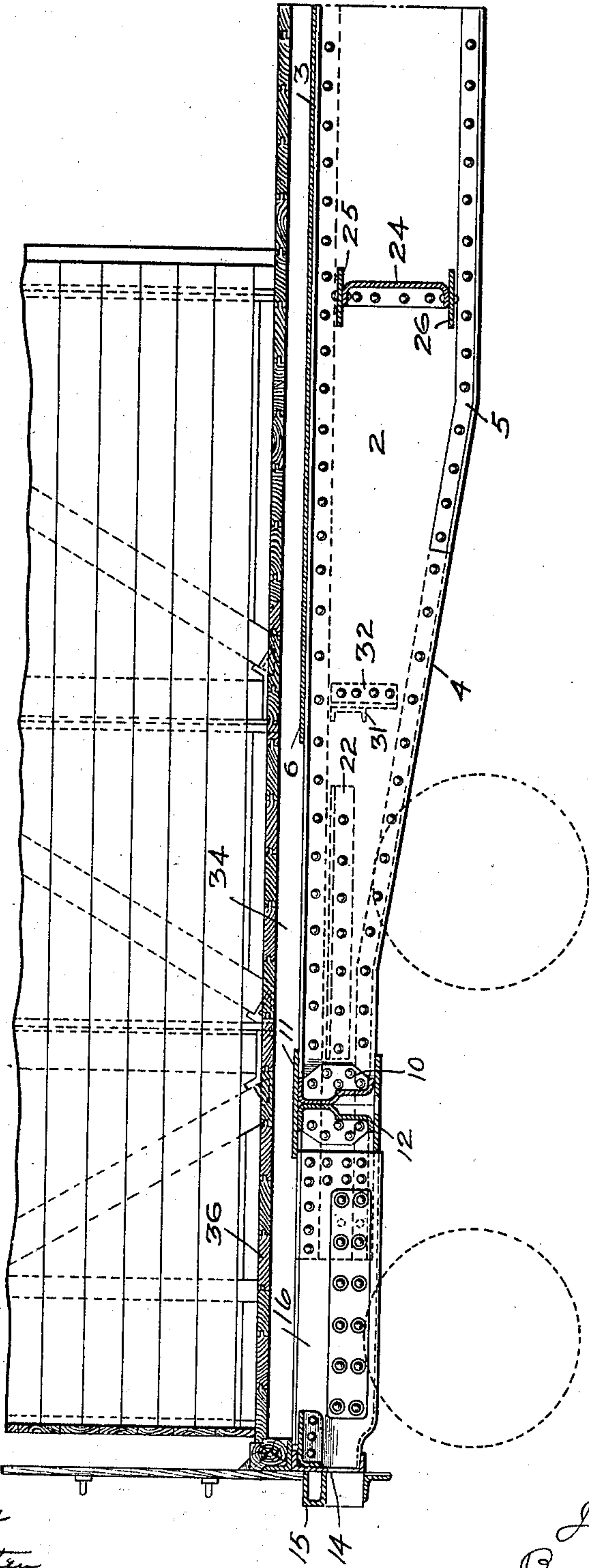
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4 SHEETS—SHEET 2.

FIG. 2



WITNESSES.

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4 SHEETS—SHEET 3.

FIG. 3

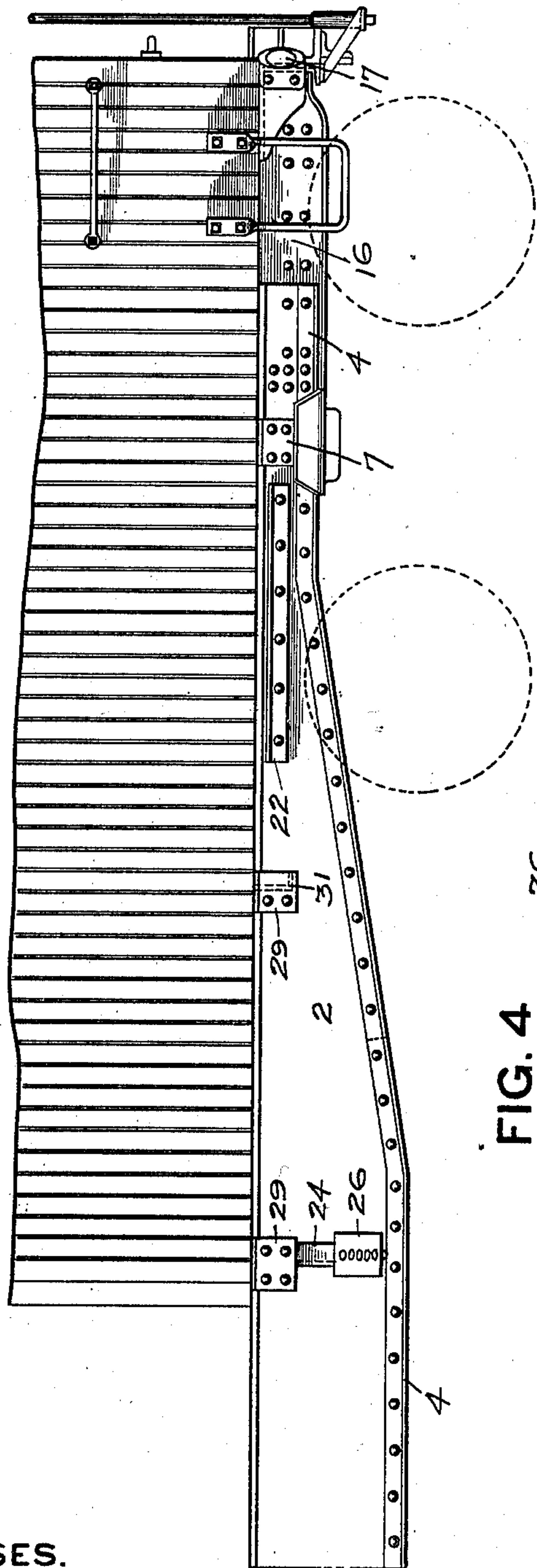
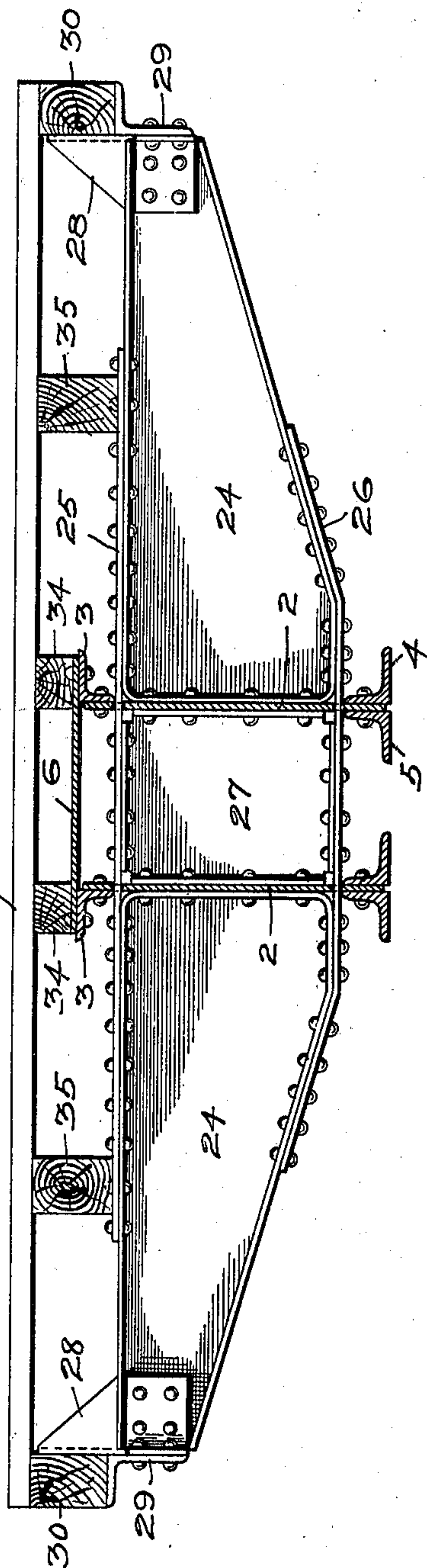


FIG. 4



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NO MODEL.

4 SHEETS—SHEET 4.

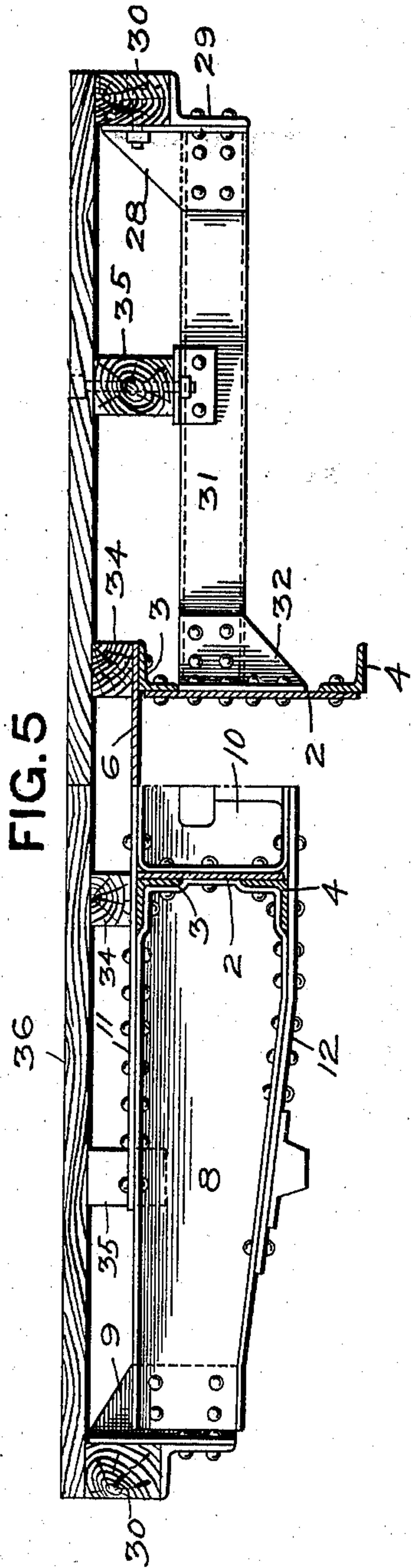


FIG. 5

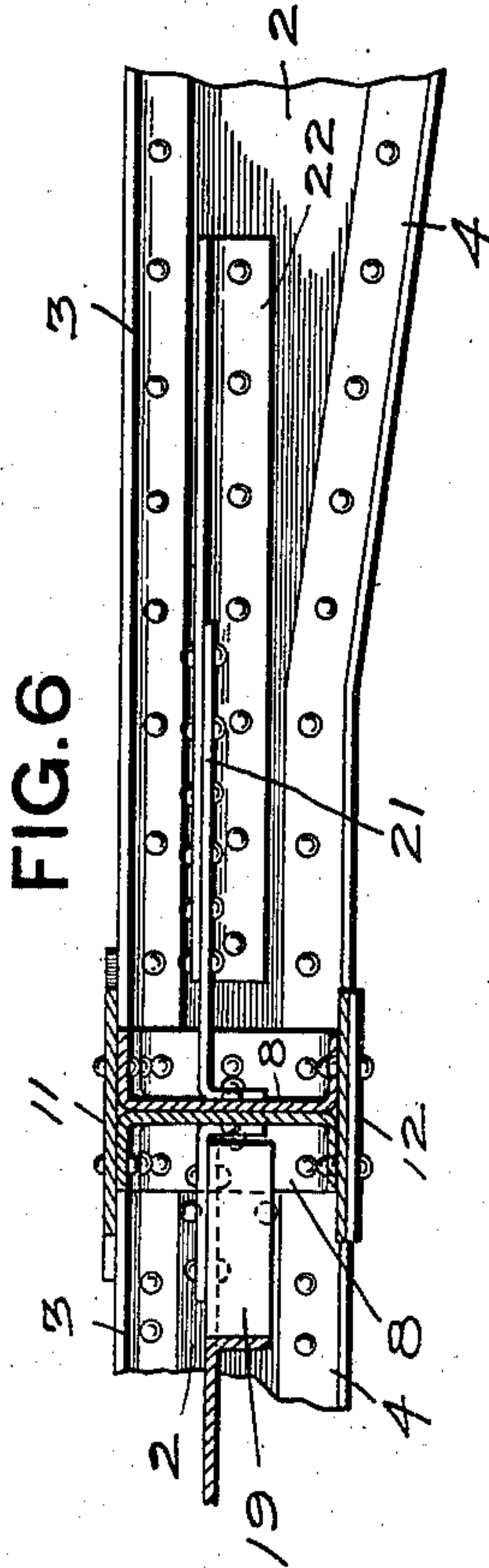


FIG. 6

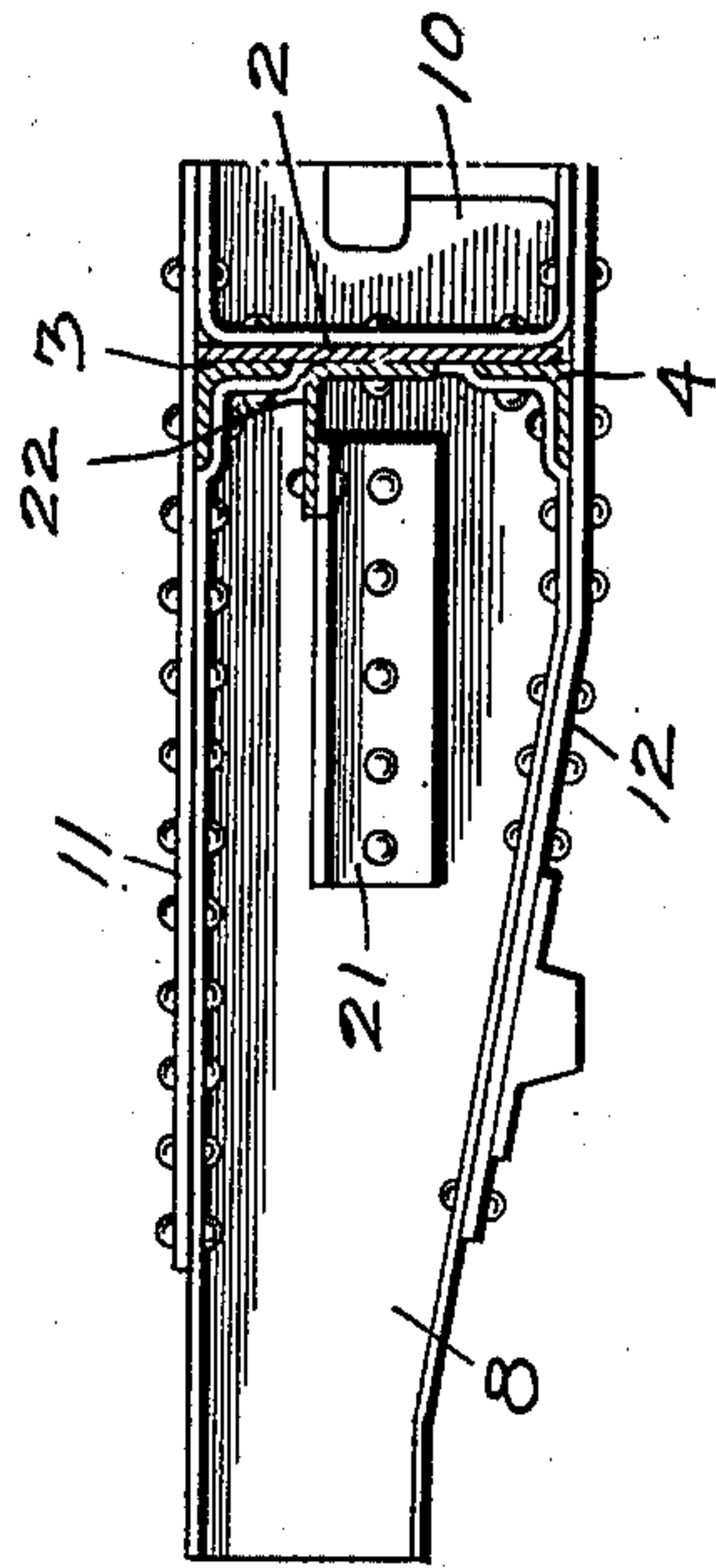


FIG. 7

WITNESSES.

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UNITED STATES PATENT OFFICE.

JOHN M. HANSEN, OF PITTSBURG, PENNSYLVANIA.

RAILWAY-CAR UNDERFRAME.

SPECIFICATION forming part of Letters Patent No. 757,110, dated April 12, 1904.

Application filed September 28, 1903. Serial No. 174,937. (No model.)

To all whom it may concern:

Be it known that I, JOHN M. HANSEN, a resident of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Railwar-Car Underframes; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to underframes for railway-cars; and its object is to provide a metallic underframe which is very light and yet durable and rigid and so constructed as to effectually resist shocks due to side swipes, as well as being exceedingly flexible, so that by slight modifications the carrying capacity thereof can be greatly varied.

In the accompanying drawings, Figure 1 is a plan view of the underframe for one-half of the car, showing the wooden nailing strips or stringers in place. Fig. 2 is a central longitudinal section of one half of the car, showing a portion of the superstructure. Fig. 3 is a side view of the other half of the car, showing a portion of the superstructure. Fig. 4 is a transverse section of the car on the line 4 4, Fig. 1. Fig. 5 on its left-hand side is a section on the line 5 5, Fig. 1, and on its right-hand portion is a section on the line 5^a 5^a, Fig. 1. Fig. 6 is a section on the line 6 6, Fig. 1; and Fig. 7 is a section on the line 7 7, Fig. 1.

The underframe comprises center sills, draft-beams, end sills, body-bolsters, cross-bearers or transoms, and diagonal braces and suitable connecting means for the same. The center sills 1 are designed to carry practically all of the load, and hence are made very deep and of truss form—that is, deeper at their middle portions than at their ends. Preferably they are formed as plate-girders, having web-plates 2, strengthened by means of a single angle-bar 3 at their upper edges and an angle-bar 4 at their lower edges, both of said angle-bars extending for the full length of the plate, and are further strengthened or reinforced at their middle portions by means of an angle-bar 5, riveted to their lower edges and extending only for slightly more than half the length of said sills. A plate 6 is riveted to the top flanges of these center sills and extends for

approximately two-thirds the length of said sills at the central portions thereof.

The body-bolsters 7 are of an old design, comprising web-filling members 8, extending from the center sills to the car sides and being formed of plates of metal provided with flanges on their top and bottom edges and inner ends, the latter serving as a means for riveting the same to the center sills, two such members being placed back to back and secured to the car sides by means of vertically-arranged angle-sections 9, secured between the spread-apart ends of the web members. Between the center sills in line with these web members is a brace 10, formed of two approximately pan-shaped members placed back to back and provided with flanges on all sides and with embossments to form an opening for the king-pin. A top cover-plate 11 extends over the center sills out toward the sides of the car and is riveted to the center brace and to the side web members. A similar transverse plate 12 extends underneath the center sills and is likewise riveted to the center brace and to the side web members and has riveted thereto the center bearing-plate and the side bearings.

The end sill 14 is a metallic beam, preferably a channel-beam, as shown, and is notched at its center to provide an opening for the draw-bar shank and has secured centrally thereto the buffer-casting 15. The draft-beams 16 are short sections of pressed plate Z shape in cross-section, having their outer ends secured to the end sill and being riveted to the center sills outside of the body-bolster, so as to facilitate repairs in case of accident.

At the corners of the car are the usual push-pole pockets 17 and corner-reinforcing castings 18, which are rigidly secured to the end sill and have riveted thereto diagonal braces 19, extending inwardly and having their inner ends abutting against and secured to the body-bolsters quite a distance from the center of the car. Inside of the body-bolsters—that is, toward the transverse center of the car—are the gusset or brace plates 21, preferably of triangular form and which are secured to

the body-bolsters and center sill, said brace-plates thus forming practically continuations of the diagonal braces 19. This diagonal-brace construction, together with the corner-castings 18, forms a very rigid corner construction, which will resist all shocks due to side swipes and poling, and the stresses occasioned by said shocks are transmitted from the corners of the car to the body-bolster and center sills inside of the body-bolster.

The end shocks in this design of underframe are taken up exclusively by the center sills, and as the latter are necessarily quite shallow just inside of the body-bolster they may be severely taxed by such shocks. It is therefore desirable to strengthen the same at this point. This is accomplished by securing to the same reinforcing members consisting of short sections of flanged bar, such as the angle-bar 22, these angle-bars also serving as a means for connecting the gusset-plates 21 to the center sills. These reinforcing-angles give to the center sills at their weakest point a sufficient cross-sectional area to safely withstand all the buffing strains.

A peculiarity of this underframe is that it has no side sills whatsoever, the entire load, as well as the buffing strains, being taken care of by the deep center sills.

In order to transfer the load from the car sides to the center sills at points intermediate the body-bolsters, I provide very substantial cross-bearers or cantaliver-transoms intermediate the body-bolsters. Two such cantaliver-transoms are shown, although the number may be varied, if desired. Each comprises a web member 24, one on each side of the car and extending from the center sills to the car sides, these web members being provided with flanges on their top and bottom edges and inner ends. By means of the latter they are riveted to the center sills, and they are connected transversely of the car by means of a top tie-plate 25, riveted to their upper edges and extending through slots cut in the webs of the center sills and at their bottoms by means of the bottom tie-plate 26, riveted to their bottom flanges and also extending through slots cut in the webs of the center sills. Between the center sills in line with these transoms are braces 27, formed of plates provided with flanges on all four edges, the two side flanges serving as means for riveting said braces to the center sills, while the top and bottom flanges are riveted, respectively, to the top and bottom tie-plates 25 and 26. These cross-bearers are true cantaliver-transoms, and at their outer ends they have secured thereto vertical angle-brackets 28 and horizontal angle-brackets 29, which serve to support the side floor-stringers or nailing-strips 30. Intermediate the body-bolsters and these deep transoms are shallow transoms or floor-supports comprising sections of

flanged bar 31, preferably angles, secured to the center sills by means of knee-pieces 32 and to the side stringers by means of vertical and horizontal angle-brackets 28 and 29. Besides the side nailing-stringers 30 I provide two wooden stringers or nailing-strips 34, located on top of the center sills, and two intermediate stringers 35, supported on the cantaliver-transoms and floor-supports. The floor 36 is nailed to these stringers.

The superstructure may be of any preferred wooden or other design, an ordinary box-car superstructure being indicated in Figs. 2 and 3. This, however, forms no part of my invention, and will therefore not be further described.

The underframe described has no metallic side sills whatever, the entire load being carried by the center sills, and as the latter are very deep a slight addition thereto will enormously increase their carrying capacity, while a metallic side sill if made shallow, as usual, would practically carry no load, but would nevertheless add considerably to the weight of the underframe. The same amount of material which would be necessary for even such a shallow side sill if added to the deep center sills will very materially increase the carrying capacity of the underframe. Hence the design shown is very flexible as well as exceedingly light and economical. The frame also is very rigid, the center sills being strengthened at their weakest points—namely, at the body-bolsters, where they must necessarily be quite shallow in order to clear the truck-bolsters and not unnecessarily elevate the body of the car. The corner construction and diagonal bracing also is such as to make a very rigid structure, so as to effectually withstand shocks due to side swipes.

What I claim is—

1. A metallic underframe for box, flat, gondola, and similar railway cars, constructed without side-carrying members and comprising body-bolsters extending out to the car sides, center sills connecting said body-bolsters and being the sole carrying means of the car, and cantaliver-transoms connected to the center sills intermediate the body-bolsters and extending out to the car sides.

2. A railway-car metallic underframe constructed without side sills and comprising body-bolsters, center sills connecting said bolsters, said sills being of greater depth at their central portions than at their ends and being the sole carrying means of the underframe, and cantaliver-transoms secured to the deep central portions of the center sills and extending out to the car sides.

3. A railway-car metallic underframe constructed without side sills and comprising body-bolsters, center sills comprising vertical plates of varying depth and having flanged bars secured to their top and bottom edges,

and cantaliver-transoms secured to said center sills intermediate the body-bolsters and extending to the car sides.

4. A railway-car metallic underframe constructed without side sills and comprising body-bolsters, center sills connecting said bolsters and forming the sole carrying means of the underframe, and transoms secured to said center sills intermediate the body-bolsters, said transoms comprising filling members on each side of the center sills extending out to the car sides, and a top tie-plate secured to said filling members and extending uninterruptedly across the center of the car.

5. A railway-car metallic underframe constructed without side sills and comprising body-bolsters, center sills connecting said bolsters and being the sole carrying means of the underframe, and cantaliver-transoms connected to said sills intermediate the body-bolsters and comprising top and bottom tie members extending uninterruptedly across the car-underframe and filling-pieces between said top and bottom tie members.

6. A metallic underframe for box, flat, gondola, and similar railway cars, constructed without side carrying members and comprising body-bolsters extending out to the car sides, center sills connecting said bolsters and being the sole carrying means of the car, cantaliver-transoms connected to the center sills intermediate the body-bolsters and extending out to the car sides, and braces between the center sills in line with said transoms.

7. A railway-car metallic underframe constructed without side sills and comprising body-bolsters, center sills connecting said bolsters and comprising vertical plates of greatest depth at their central portions and having flanged strengthening-bars secured to their upper and lower edges, cantaliver-transoms secured to said center sills intermediate the body-bolsters, and a top cross-tie secured to the upper portions of said transoms and extending through slots in the web-plates of the center sills.

8. A railway-car metallic underframe constructed without side sills and comprising body-bolsters, center sills connecting said bolsters and comprising web-plates formed deepest at their central portion and having strengthening-angles riveted to their top and bottom edges, and transoms intermediate the body-bolsters and comprising filling-pieces secured to the center sills and extending out to the car sides and top and bottom cross-ties secured to the upper and lower portions of said filling-pieces and extending through slots formed in the webs of the center sills.

9. A railway-car metallic underframe constructed without side sills and comprising body-bolsters, center sills connecting said bolsters and forming the sole carrying means of the underframe, cantaliver-transoms con-

nected to the center sills intermediate the body-bolsters and extending out to the car sides, brackets secured to the ends of said transoms, and wooden floor-stringers secured to said brackets.

10. A railway-car metallic underframe constructed without side sills and comprising body-bolsters, center sills connecting said bolsters, cantaliver-transoms connected to the center sills intermediate the body-bolsters and extending out to the car sides and having their upper faces below the top of the center sills, and wooden floor-stringers supported by said transoms.

11. A railway-car underframe comprising body-bolsters, center sills connecting said bolsters, said center sills being of increased depth at their central portions, and reinforcing-bars riveted to said center sills inside of the body-bolsters and extending toward the center of the car.

12. A railway-car underframe comprising body-bolsters, center sills connecting said bolsters and comprising web-plates of varying depth, strengthening-bars riveted to the top and bottom edges thereof, and reinforcing-bars riveted to said web-plates and extending from the body-bolsters toward the center of the car.

13. A railway-car underframe comprising body-bolsters composed of transverse members and a top cover-plate secured thereto, center sills connecting said bolsters, and triangular brace-plates in the angles between the center sills and body-bolsters inside of the latter and below the top cover-plate thereof and secured to said body-bolsters and center sills.

14. A railway-car underframe comprising body-bolsters, center sills of increased depth at their central portions and connecting said body-bolsters, reinforcing-bars riveted to the sides of the center sills inside of the body-bolsters and extending toward the center of the car, and brace-plates interposed in the angles between the center sills and body-bolsters inside of the latter and secured to the reinforcing-bars of the center sills and to the body-bolsters.

15. A railway-car underframe comprising body-bolsters, center sills, end sills, diagonal braces secured at the corners of the car and abutting against and secured to the body-bolsters outside of the center sills, and brace-plates interposed in the angle between the center sills and body-bolsters and inside of the latter and secured to said body-bolsters and center sills.

16. In a railway-car underframe, the combination of body-bolsters, center sills connecting said body-bolsters and being of increased depth at their central portions, end sills, diagonal braces connected at the corners of the cars and secured to the body-bolsters outside

of the center sills, reinforcing-bars secured
to the sides of the center sills and projecting
toward the center of the car, and brace-plates
interposed in the angle between the center
5 sills and body-bolsters and inside of the latter
and secured to the latter and the reinforcing-
bars.

In testimony whereof I, the said JOHN M.
HANSEN, have hereunto set my hand.

JOHN M. HANSEN.

Witnesses:

ROBERT C. TOTTEN,
J. R. KELLER.