

No. 826,809.

PATENTED JULY 24, 1906.

A. STUCKI.  
METALLIC RAILWAY CAR.  
APPLICATION FILED JAN. 25, 1906.

5 SHEETS—SHEET 1.

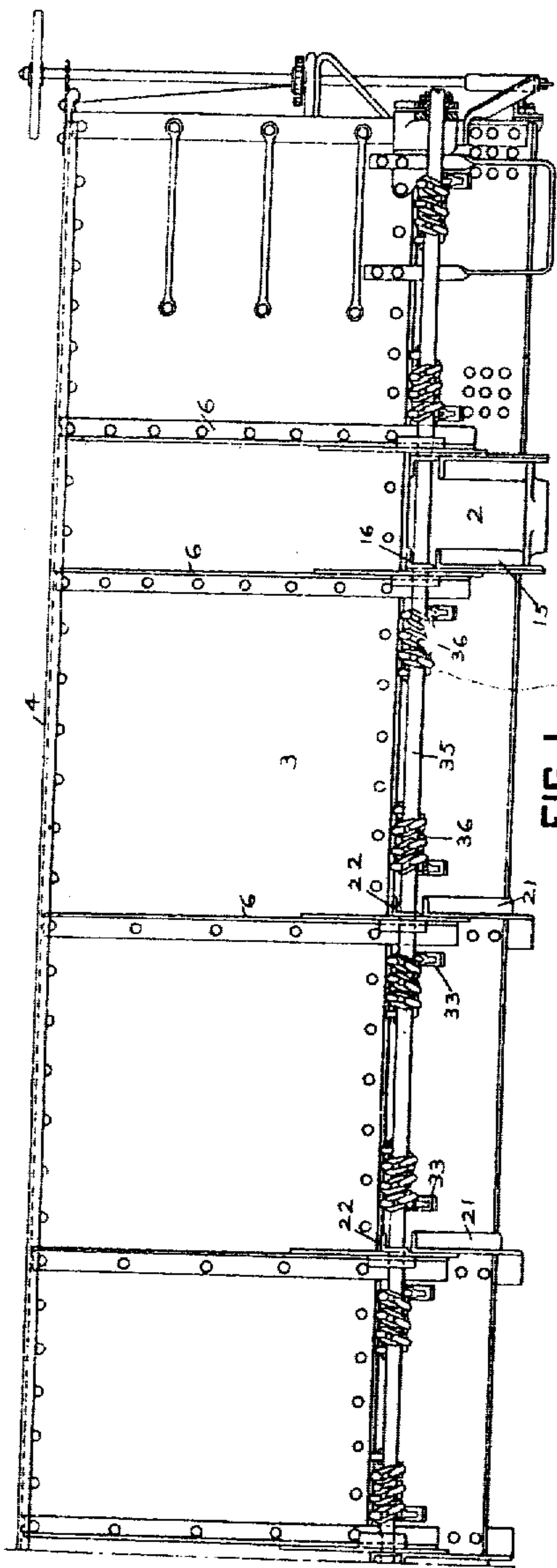


FIG. 1.

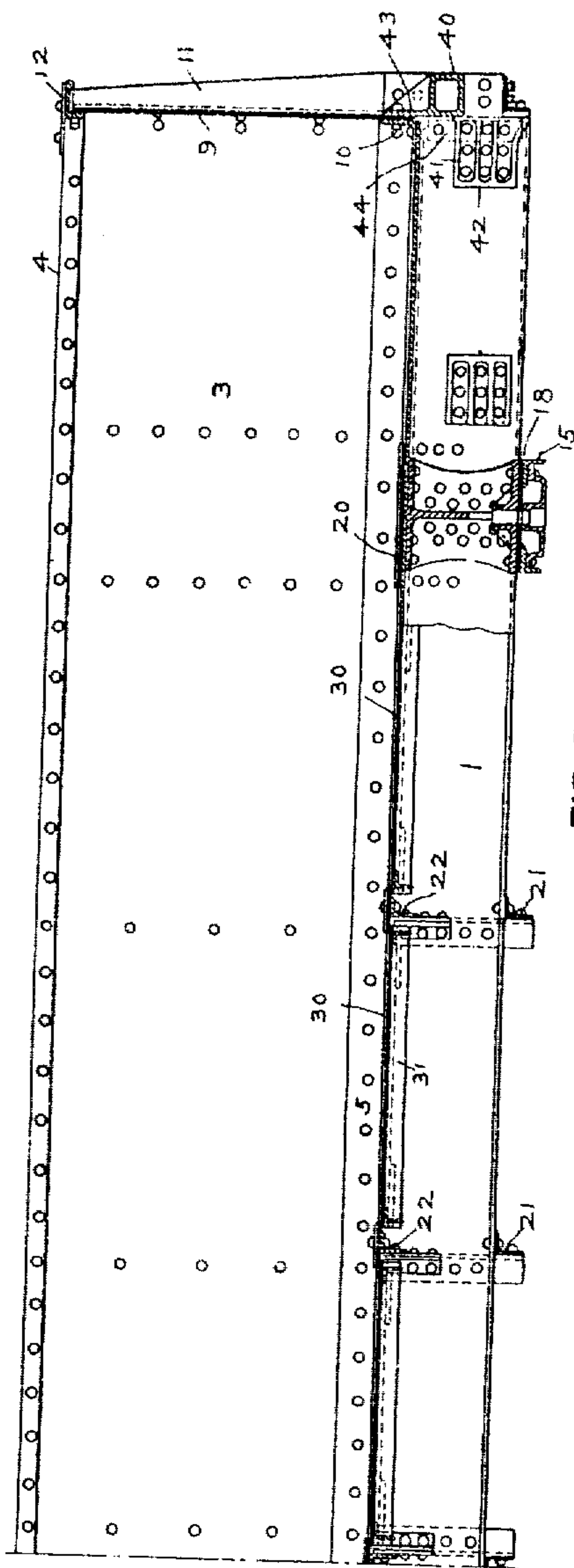


FIG. 2.

WITNESSES.

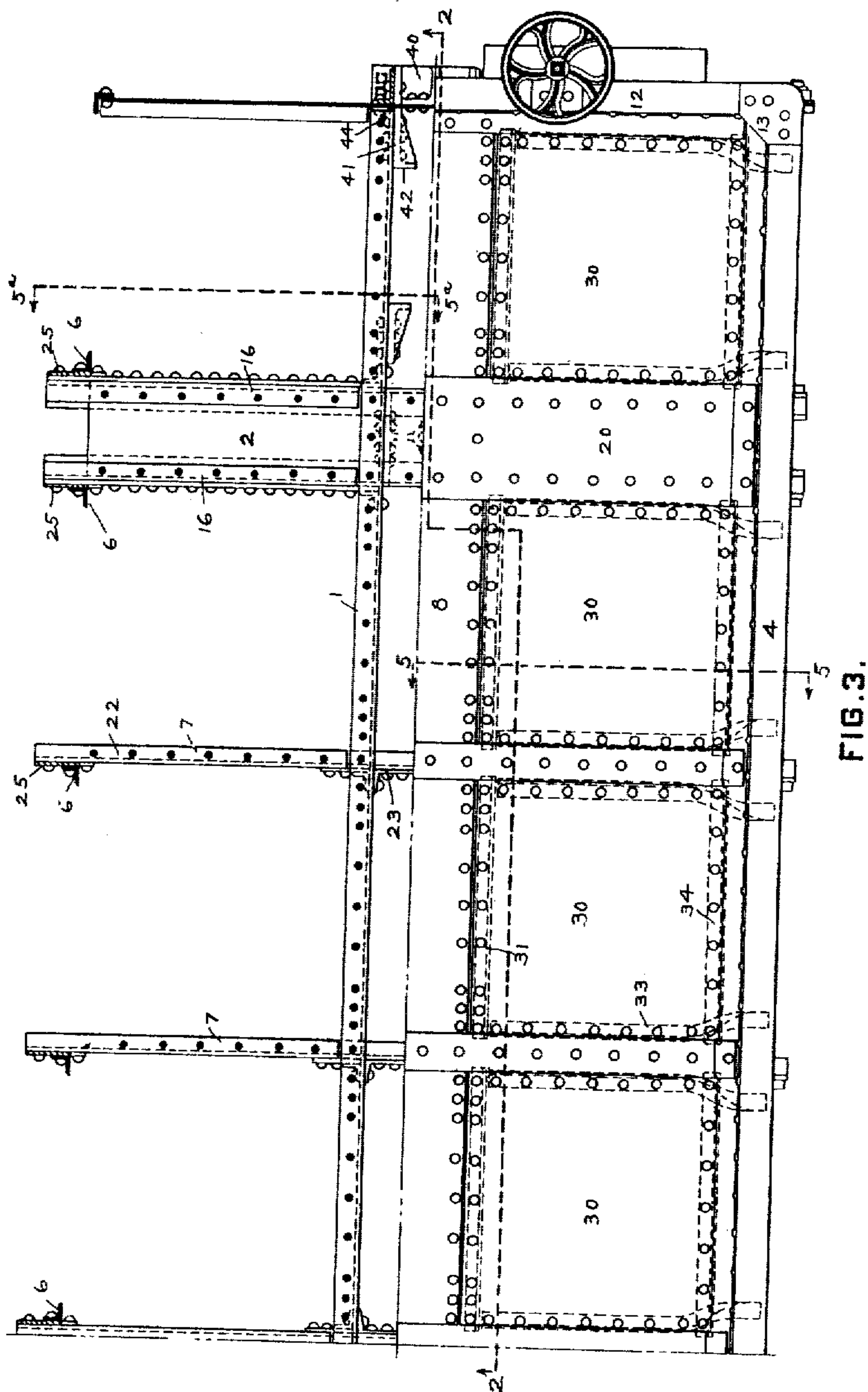
*L. S. Mather*  
*Alice A. Gill*  
x *7 st. (Eand Bruce)*  
x *105-183*

INVENTOR.

*Arnold Stucki*

A. STUCKI.  
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5 SHEETS—SHEET 2.



WITNESSES.

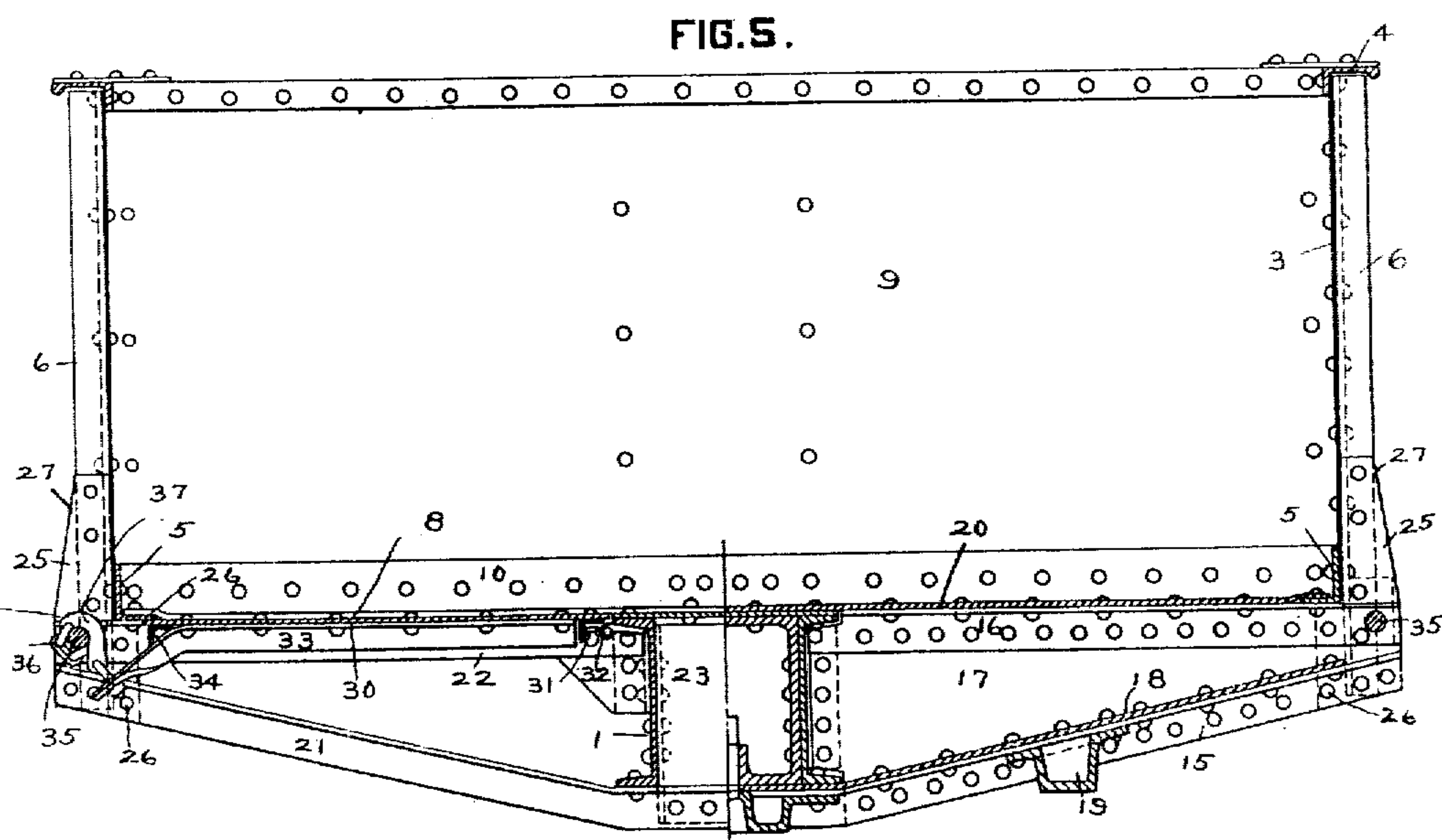
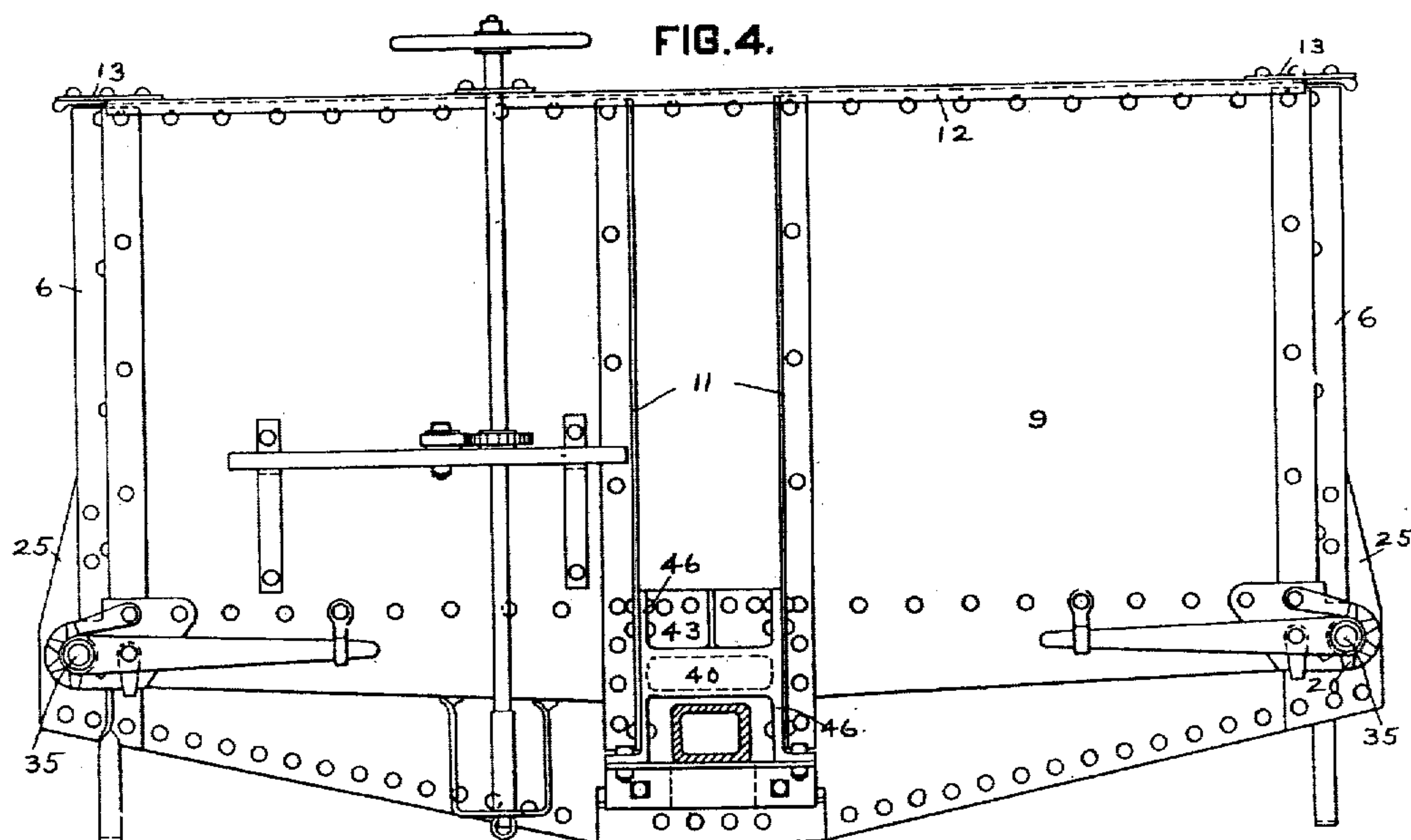
*L. S. Mather*  
*Alfred A. Trill*

INVENTOR.

*Arnold Stucki*

A. STUCKI.  
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5 SHEETS--8 SHEET 3.



WITNESSES.

L. S. Mather  
Alice A. Trill

**INVENTOR:**

Arnold Stucki

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5 SHEETS—SHEET 4.

FIG. 6.

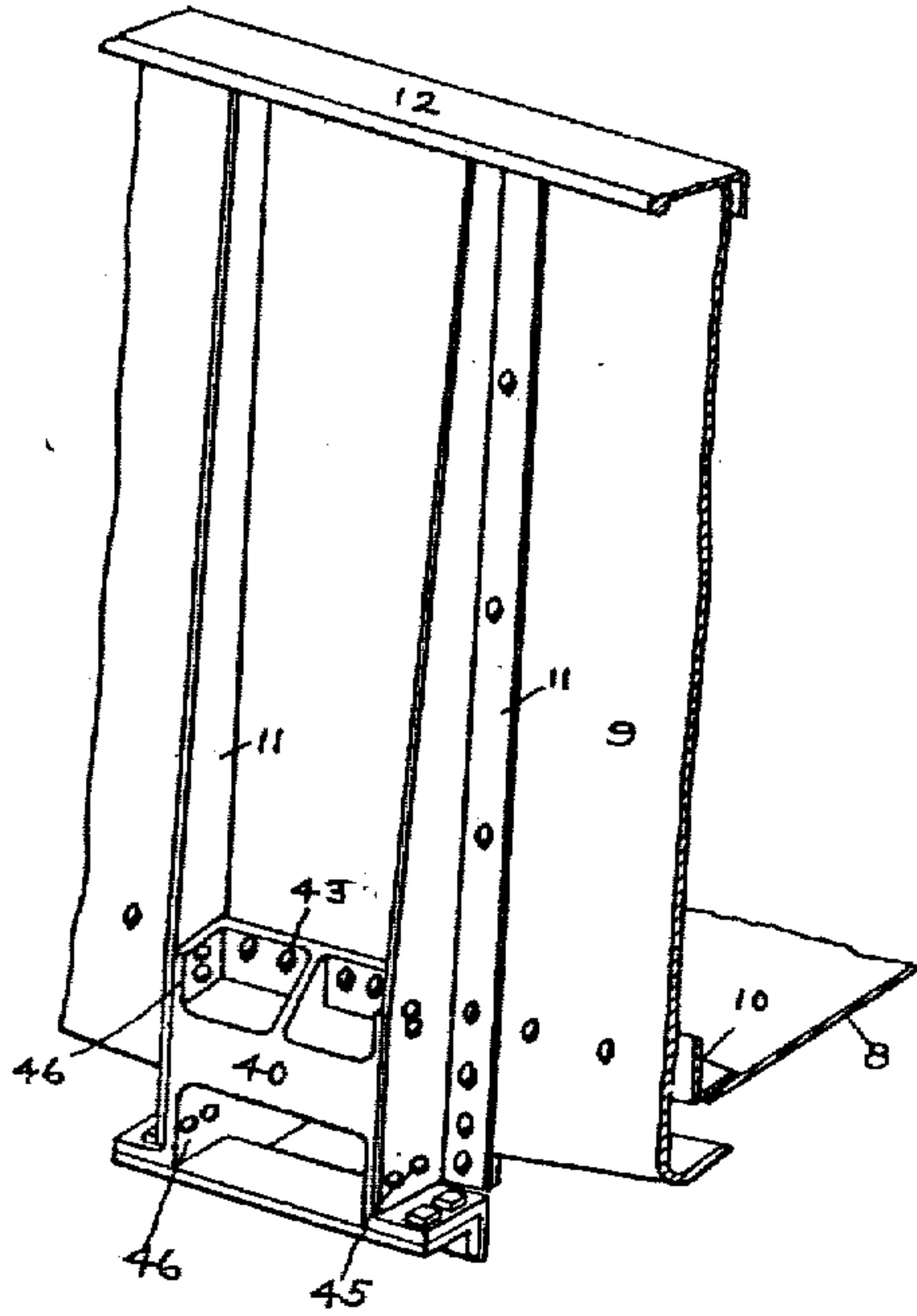
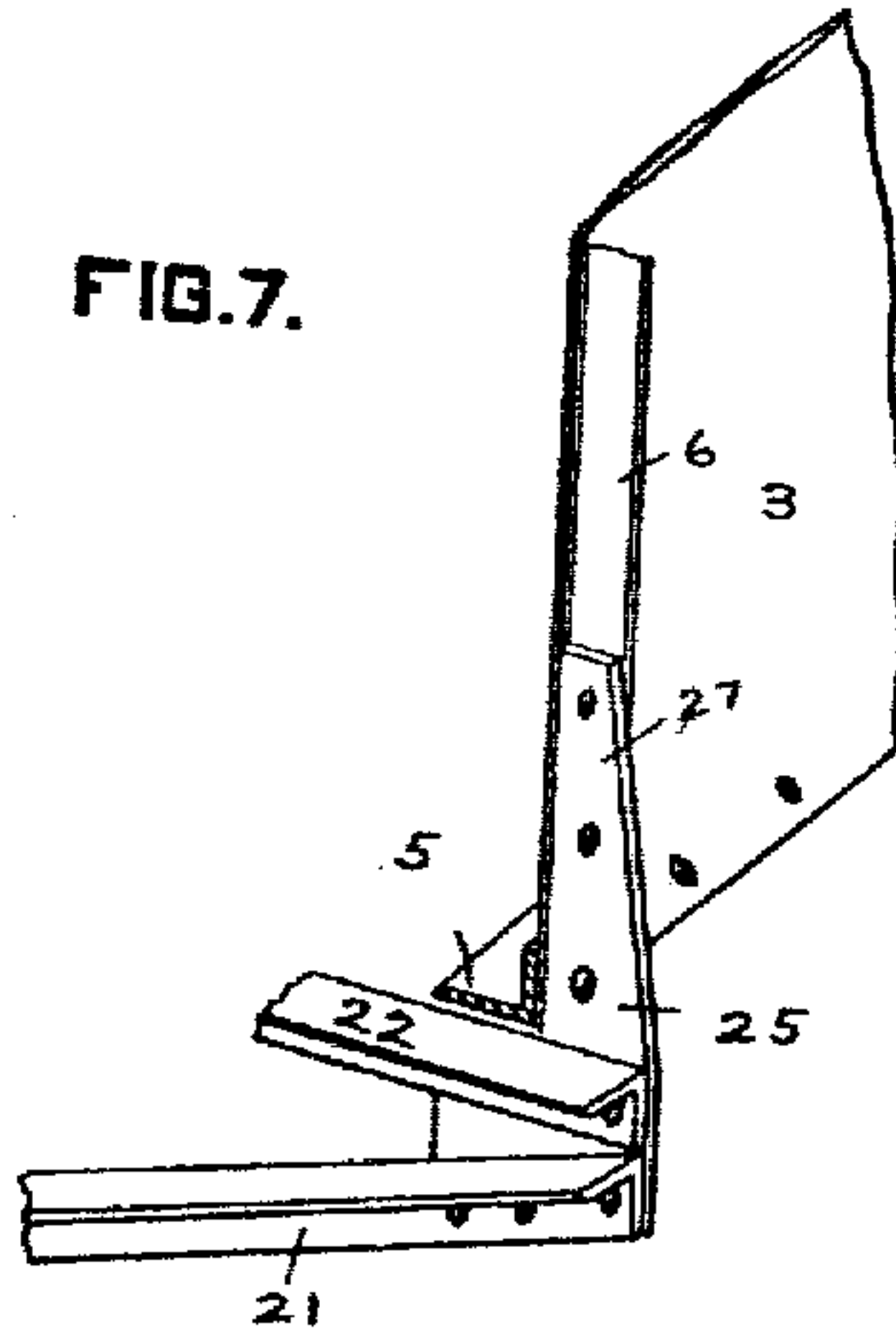


FIG. 7.



WITNESSES.

*L. O. Mathew*  
*Alice A. Trill*

INVENTOR.

*Arnold Stucki*



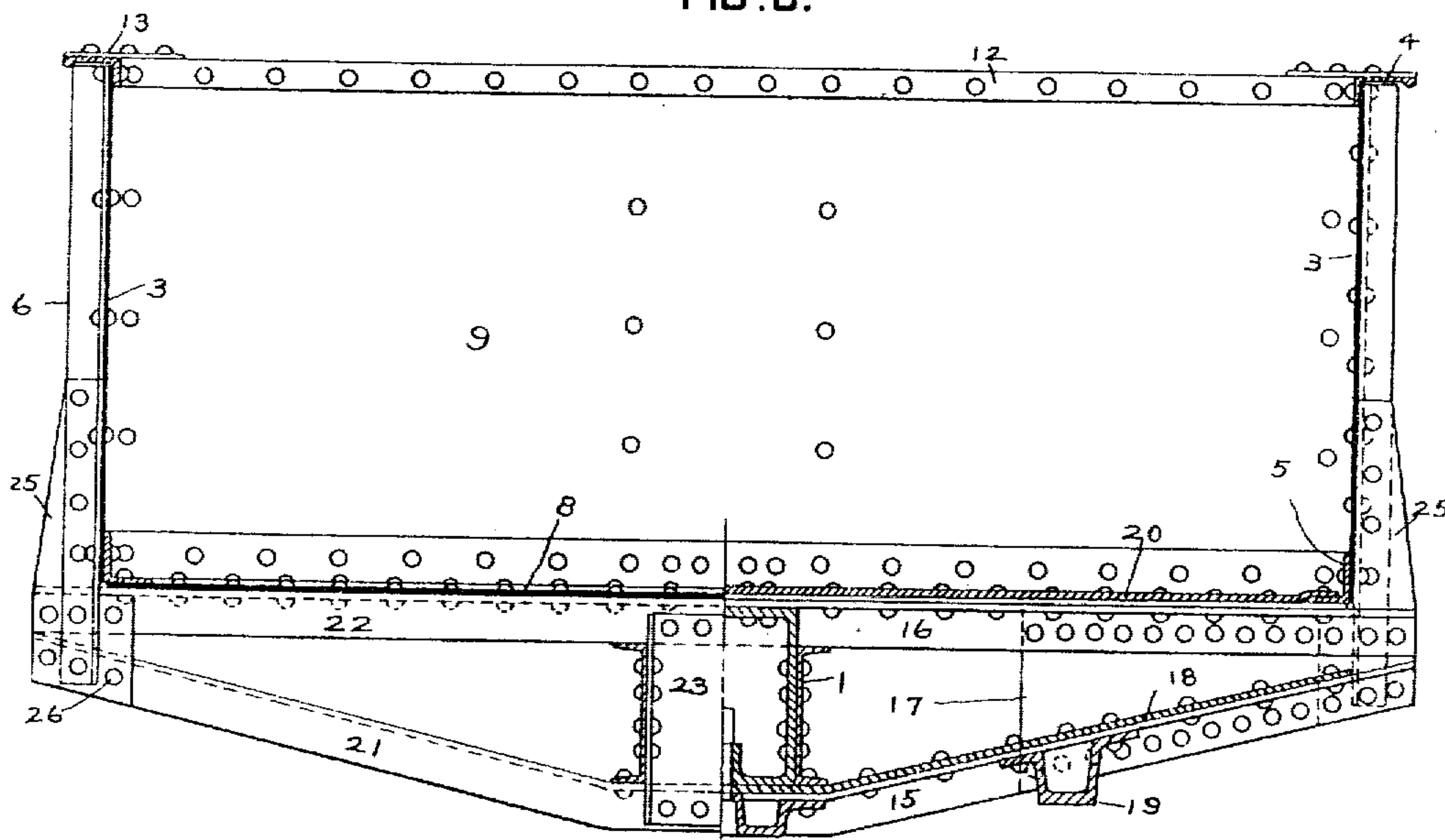
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5 SHEETS--SHEET 5.

FIG. 8.



WITNESSES.

*L. S. Mathier*  
*Alice A. Trill*

INVENTOR.

*Arnold Stucki*



# UNITED STATES PATENT OFFICE.

ARNOLD STUCKI, OF ALLEGHENY, PENNSYLVANIA.

## METALLIC RAILWAY-CAR.

No. 826,809.

Specification of Letters Patent.

Patented July 24, 1906.

Application filed January 25, 1906. Serial No. 297,828.

*To all whom it may concern:*

Be it known that I, ARNOLD STUCKI, a citizen of the United States, residing at Allegheny, county of Allegheny, and State of Pennsylvania, have invented a certain new and useful Improvement in Metallic Railway-Cars, of which the following is a specification.

The present invention comprises certain improvements in metallic railway-cars, and more especially to gondola cars provided with drop-doors.

The invention consists of certain improvements in construction and arrangement of details of the car whereby greater strength and other advantages are secured.

The accompanying drawings illustrate a gondola car having my improvements embodied therein.

Figure 1 shows one-half of the car in side elevation, Fig. 2 showing the same in vertical longitudinal section taken on the line 2 2, Fig. 3, Fig. 3 being in part a plan view and in part a horizontal section with the floor-plates and doors omitted, Fig. 4 showing an end view of the car, and Fig. 5 a cross-section, the left end portion being on the line 5 5, Fig. 3, and the right end portion on the line 5<sup>a</sup> 5<sup>a</sup>, Fig. 3, Fig. 6 being a perspective detail view showing the buffer-casting and end stake connection. Fig. 7 is a similar view showing the side stake and connection to the floor-support, Fig. 8 being a cross-section of a car, illustrating a modification.

The car illustrated is provided with center sills 1, which are shown as rolled channel-beams and which project beyond the body-bolsters 2 out to the end of the car, the outer ends forming the draft-beams. The car is not provided with distinct side sills, but the car sides are of plate-girder construction, and therefore form combined sides to confine the lading and side sills to carry the load. These sides are formed of the plates 3, top chord 4, bottom chord 5, and vertical stiffening members or stakes 6. These girders are supported on the outer ends of the body-bolsters and at intervals between the body-bolsters are connected to the center sills by means of suitable transverse floor-supports 7. The car-floor 8 is formed of suitable metal plates supported on the center sills, body-bolsters, and transverse floor-supports, and the ends of the car are formed of metal plates 9. The floor-plates are secured to the car sides by means of the lower chords 5 of the plate-girder sides, which are angle-bars, as shown. Said floor-plates

are united to the end plates 9 by similar angle-bars 10, the car not having any end sill other than the end plates 9, angle-bars 10, and vertical stiffeners or end stakes 11 and top reinforcing-bar 12. The top chord 4 of the sides and top reinforcing-bar 12 of the ends are formed as bulb-angles, preferably having the flange riveted to the plates and the web extending outwardly, as shown. At the corners of the car suitable gusset-plates 13 connect the side and end bulb-angles.

The body-bolsters are practically double trusses, each comprising a bottom member or chord 15, lying underneath the center sills and extending out to the car sides and shown as angle-bars, and a top member 16, likewise shown as an angle-bar and extending from the car sides inwardly to the center sills, as shown in Fig. 5, and a suitable web or gusset-plate 17, connecting the top and bottom members of the truss and to the center sills. Fig. 8 shows a modification in which the center sills are of reduced depths, so that the top chord 16 of the bolster-trusses extends uninterruptedly across the tops of the center sills. This figure also shows the gusset-plates extending only a part of the distance from the center sills to the car sides. There is a stake 6 secured to the outer end of each of the trusses comprising the body-bolster, so that I have practically a double-stake construction at the body-bolsters. The bottom angles 15 of the two trusses are connected by means of a plate 18, which lies directly in contact with the lower edges of the center sills and extends out nearly to the car sides. The side bearings 19 are riveted to this plate. The top bars 16 of the two trusses of the bolster are united by means of a plate 20, extending from side to side of the car and forming a part of the car-floor. The transverse floor-supports 7 are also shown as trusses comprising the bottom angle-bar 21, extending from side to side uninterruptedly underneath the center sills, and a top angle-bar 22, either secured to the center sills, as in Fig. 5, and extending out to the car sides or else extending uninterruptedly across the tops of the center sills when the latter are of reduced depth, as shown in Fig. 8. Between the center sills, in the same plane as these cross-beams, are braces 23, which are shown as sections of channel-bars arranged vertically with their flanges riveted to the center sills and their webs backing against and riveted to the bottom angle 21 of the floor-supports or, as shown



in Fig. 8, also having their upper ends riveted to the top angle-bar 22 of said floor-supports.

The side stakes 6 are reinforced at their bottoms by means of a member 25, which may be a casting or a plate, as shown in the drawings. This reinforcing and connecting member is secured to the outer ends of the transverse floor-supports 7, and thus forms a very strong connection for the lower end of the stakes. This connecting member can be extended inwardly toward the center sills as far as necessary or desirable in order to receive one or more rivets 26, which lie underneath the floor inside of the car sides, so that any amount of strength can be secured. The lower ends of the stakes are riveted to the upwardly-extending portion 27 of these connecting members and are reinforced thereby at a point where the stakes are weakest, and as a consequence a very light section of stake can be used. These reinforcing and connecting members hold the stakes practically rigid, so that these upper ends cannot readily bulge outwardly. When the floor-supports are formed as trusses, as shown in the drawings, the reinforcing and connecting member 25 also serves the function of a gusset-plate for uniting the outer ends of the truss members. At the botly-bolsters, however, a separate gusset-plate 17 is preferably used.

The floor of the car may either be fixed, as shown in Fig. 8, or may be made up in part or largely of drop-doors 30, as shown in the other figures, located between the center sills and sides and the transverse underframe members. These doors are formed of plates and are reinforced on all four sides by means of angle-bars. The inner end angle-bar 31 receives the hinges 32. The side angle-bars 33 have their outer ends bent toward each other, so as to clear the stakes, and bent downwardly, so as to receive the winding-chain. These downwardly-bent ends are backed and reinforced by the outer end angle 34. The winding-shafts 35 extend for the full length of the car near the bottom of the sides and are mounted in the connecting and reinforcing members 25. A lever with dog, ratchet-wheel, and pawl can be made in the usual way, as shown in Fig. 4. The winding-chains 36 are connected at one end to the shaft 35 and have their opposite ends connected to the downwardly-bent ends of the angle-bars 33 by means of hook members 37, which when the doors are entirely closed hook over the shaft 35 sufficiently far to pass slightly beyond the center thereof. Consequently the load on the door has no tendency to turn the shaft backwardly. The hooks do not reach over the shaft far enough to prevent their being disengaged by friction when the shaft is rotated backwardly.

The end stakes 11 are riveted to the end plate and have their lower ends also riveted to the end or buffer casting 40. The latter

is very securely fastened to the draft-beams, as by being provided with inwardly-projecting webs 41, riveted to the draft-beams, and preferably so shaped as to also form the outer draft-lugs 42. This casting has an upwardly-projecting flange 43, which is riveted through the lower edge of the end plate and to the floor-connecting angle 10, thus getting a very secure connectibn. The stakes 11 preferably are of angle form and have one flange lying against the end plates, so that the lower end of said flange can be riveted through the end plate and to a vertical connecting-angle 44, which secures the outer ends of the draft-beams to the end plate. The lower end of the outwardly-projecting flange of the stakes is secured, by means of rivets 45, to outwardly-projecting webs 46 on the buffer-casting. In this way a very rigid connection for the end stakes is provided. The end casting preferably serves the function of outer draft-lugs.

By the use of the reinforcing and connecting members 25 at each stake deep cross-beams heretofore necessary to keep the car square can be dispensed with and the plate-girder sides will be perfectly stable and held in true vertical position in order to effectually carry the load. This is of course greatly aided by the strong connection of the lower ends of the side stakes, which will prevent the upper ends from bulging out and tend to hold the plate-girder sides in true vertical position.

What I claim is—

1. A metallic railway-car comprising end walls and floor-plates and draft-beams, a buffer-casting having a striking-face and a vertical web projecting above said striking-face and secured to the end walls, and end stakes secured to the end walls and having their lower ends secured to said casting.

2. A metallic railway-car comprising end walls and floor-plates and draft-beams, a buffer-casting provided with inwardly-projecting webs secured to the draft-beams, and end stakes secured to the end walls and having their lower ends secured to the buffer-casting.

3. A metallic railway-car comprising draft-beams, and a buffer-casting having inwardly-projecting webs which are secured to the draft-beams and also forming draft-lugs.

4. A metallic railway-car comprising end walls, floor-plates and draft-beams, a buffer-casting having a striking-face and a vertical web projecting above said striking-face and secured to the end walls and provided with vertical outwardly-extending flanges, and end stakes secured to the end walls and having their lower ends secured to the flanges of said buffer-casting.

5. A metallic railway-car comprising end and floor plates, an angle-bar connecting said end and floor plates, draft-beams, a



buffer-casting secured to the draft-beams and having an upwardly-extending flange riveted through the end plates to the connecting angle-bar and having outwardly-projecting vertical flanges, and end stakes secured to the end plates and having their lower ends secured to the flanges of the buffer-casting.

6. A metallic railway-car comprising side walls, stakes secured thereto, transverse floor-supports, and connecting and reinforcing members riveted to the floor-supports and having the lower ends of the stakes riveted thereto.

7. A metallic railway-car comprising side walls, transverse floor-supports, stake connecting and reinforcing members having a portion extending inwardly toward the center of the car and riveted to the floor-supports and having upwardly-extending portions, and stakes riveted to said upwardly-extending portions and secured to the side walls.

8. A metallic railway-car comprising side walls, transverse floor-supports comprising upper and lower truss members, connecting and reinforcing plates connecting the outer ends of said truss members and having upwardly-projecting portions, and stakes riveted to said upwardly-extending portions and secured to the car sides.

9. A metallic railway-car comprising side

walls, transverse floor-supports, connecting and reinforcing members riveted to the floor-supports, stakes having their lower ends riveted to said connecting members and secured to the car sides, doors provided in the floor of said car, and operating-shafts for said door extending longitudinal of the car and mounted in said connecting and reinforcing members.

10. A metallic railway-car provided with a floor having door-openings therein, doors closing said openings and provided at their sides with reinforcing-bars having their outer ends bent downwardly, a winding-shaft, and winding chains leading therefrom to the downwardly-bent ends of said reinforcing-bars.

11. A metallic railway-car having a floor provided with door-openings, doors closing said openings and provided with side reinforcing-bars having their ends bent downwardly, an outer edge reinforcing-bar interposed between the door and said downwardly-bent ends, a winding-shaft, and chains connecting the same with said downwardly-bent ends.

ARNOLD STUCKI.

Witnesses:

ALICE A. TRILL,  
L. P. MATHER.