

No. 697,021.

Patented Apr. 8, 1902.

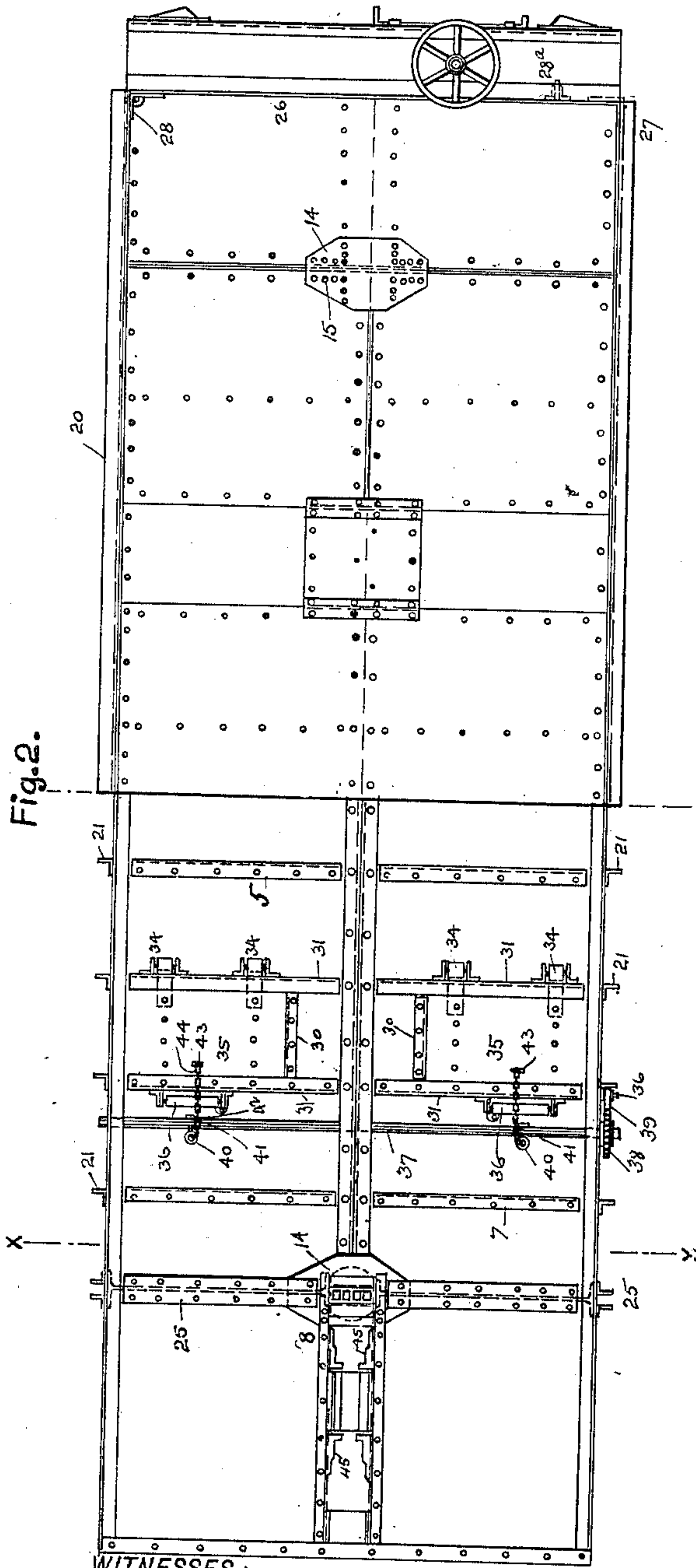
R. V. SAGE.
DROP DOOR GONDOLA CAR.

(Application filed Oct. 3, 1901.)

(No Model.)

3 Sheets—Sheet 1.

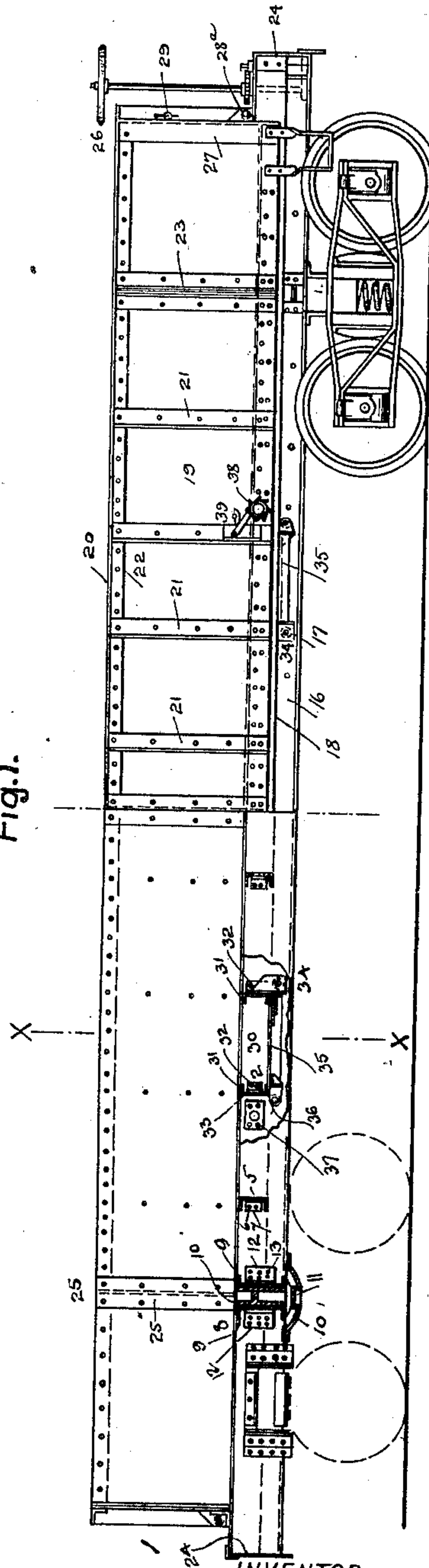
Fig. 2.



WITNESSES:

B. F. Sparr
Hartwell P. Heath

Fig. 1.



INVENTOR

Ralph V. Sage

BY

J. R. Little
his ATTORNEY.

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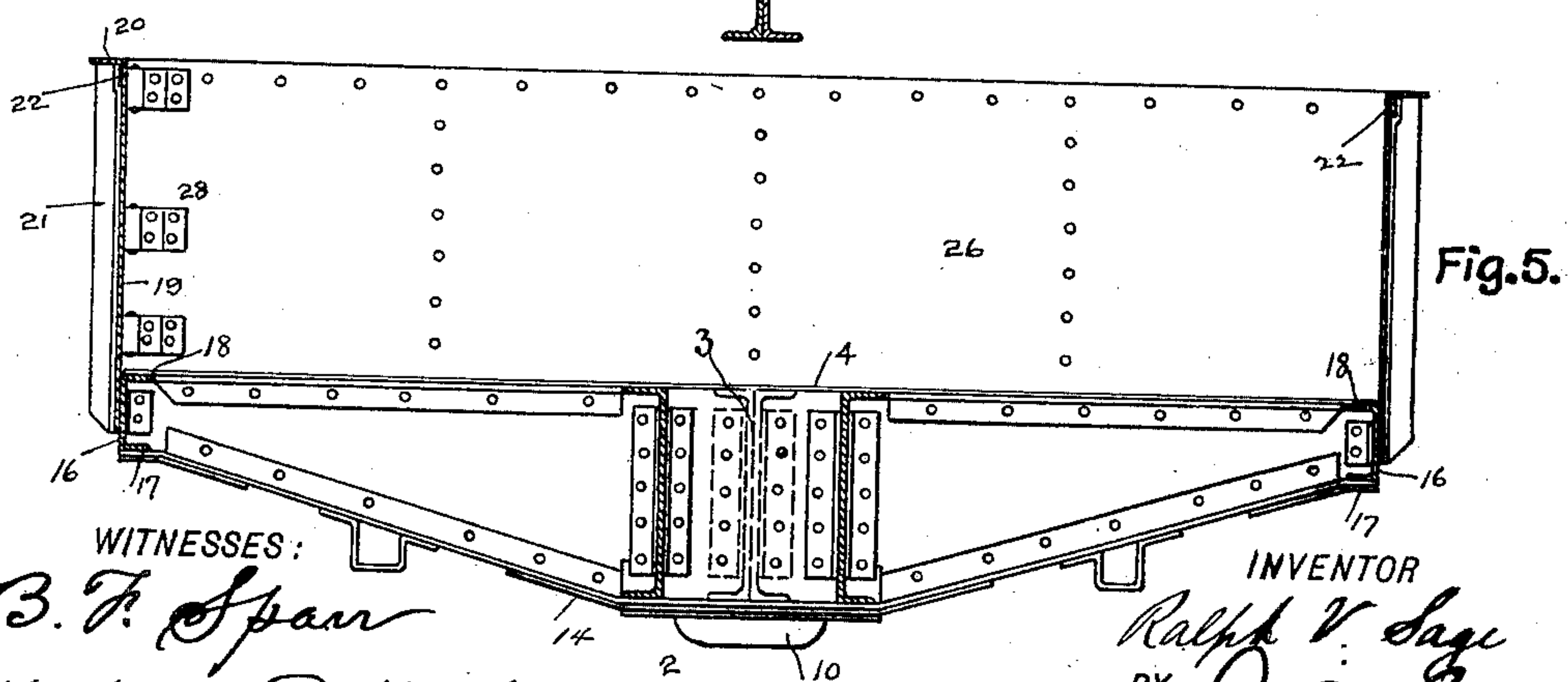
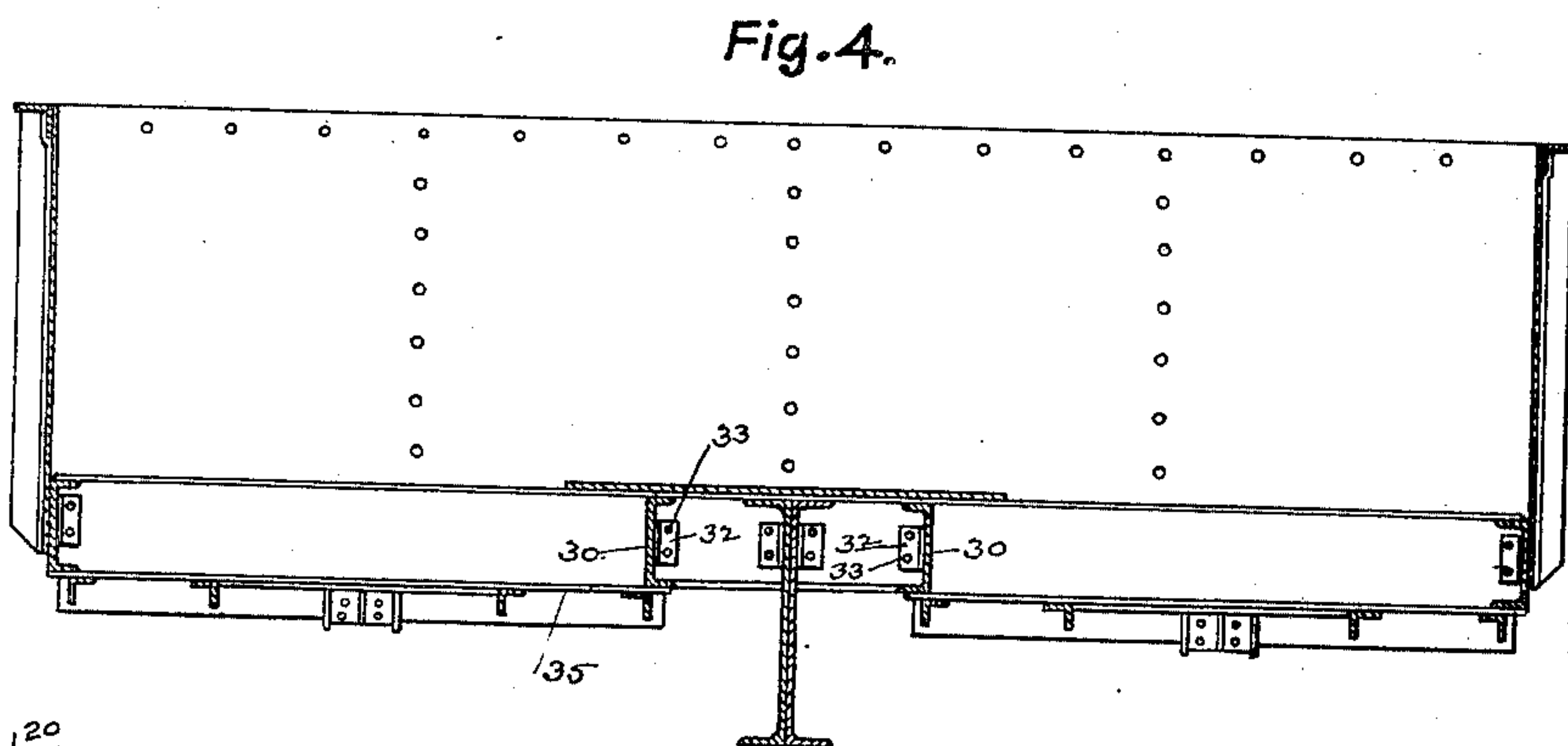
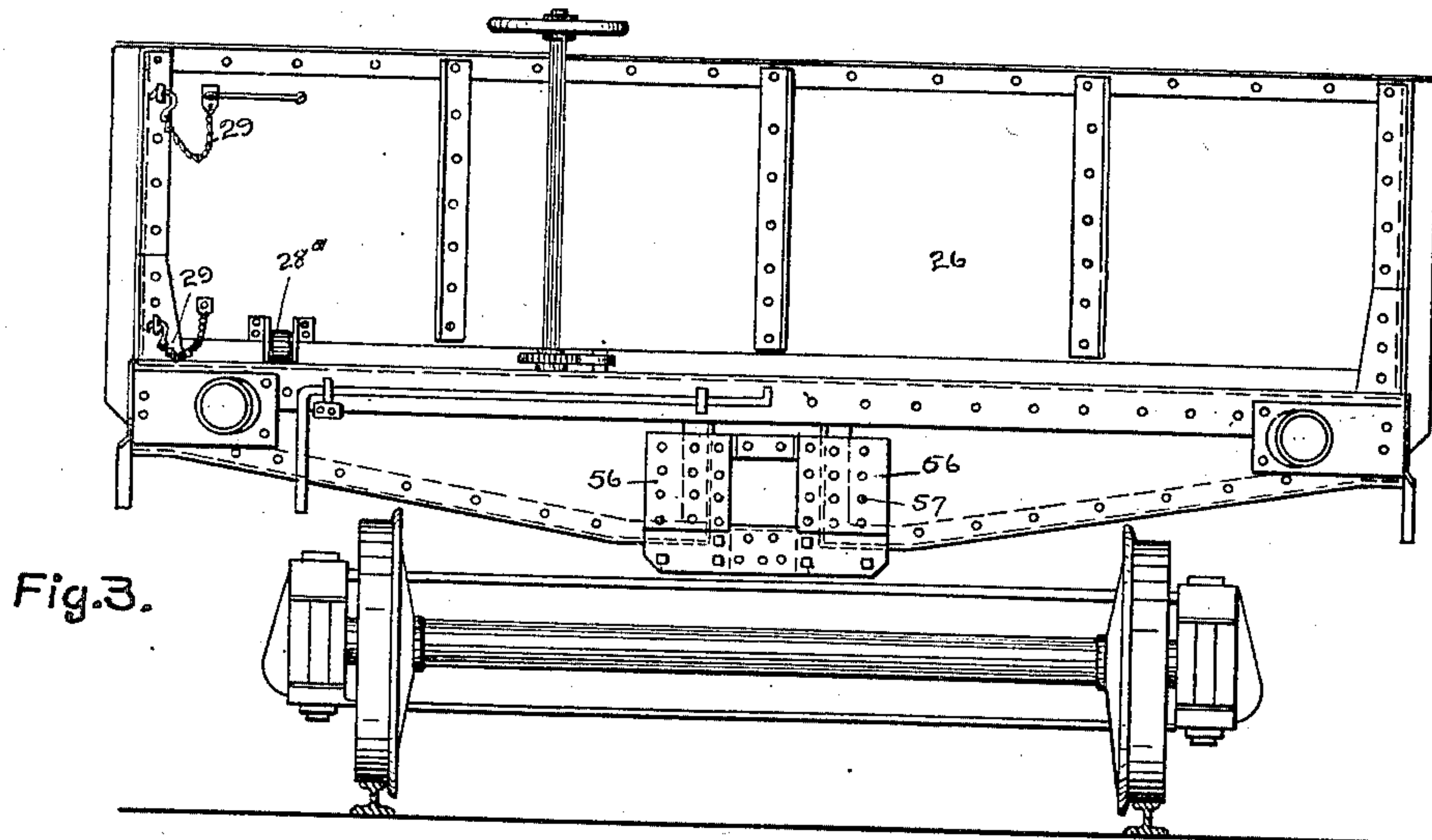
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3 Sheets—Sheet 3.

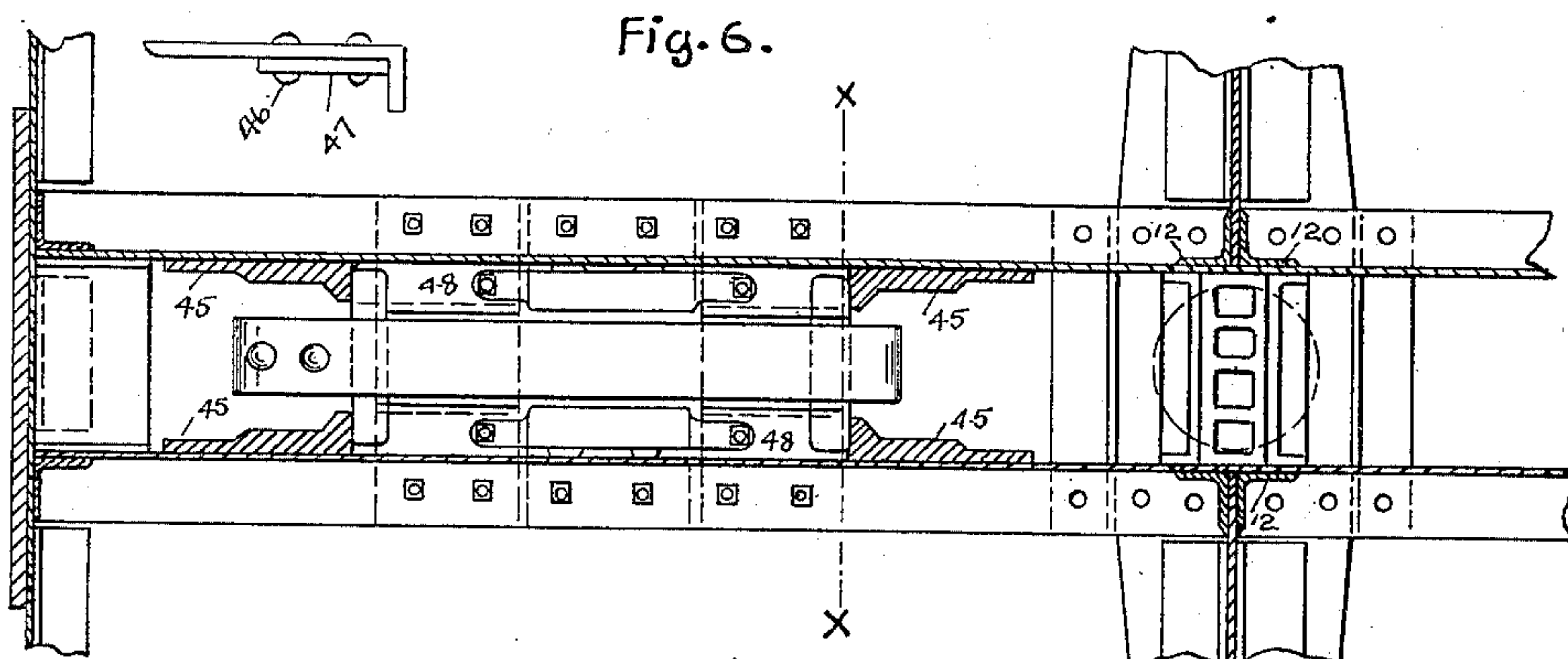
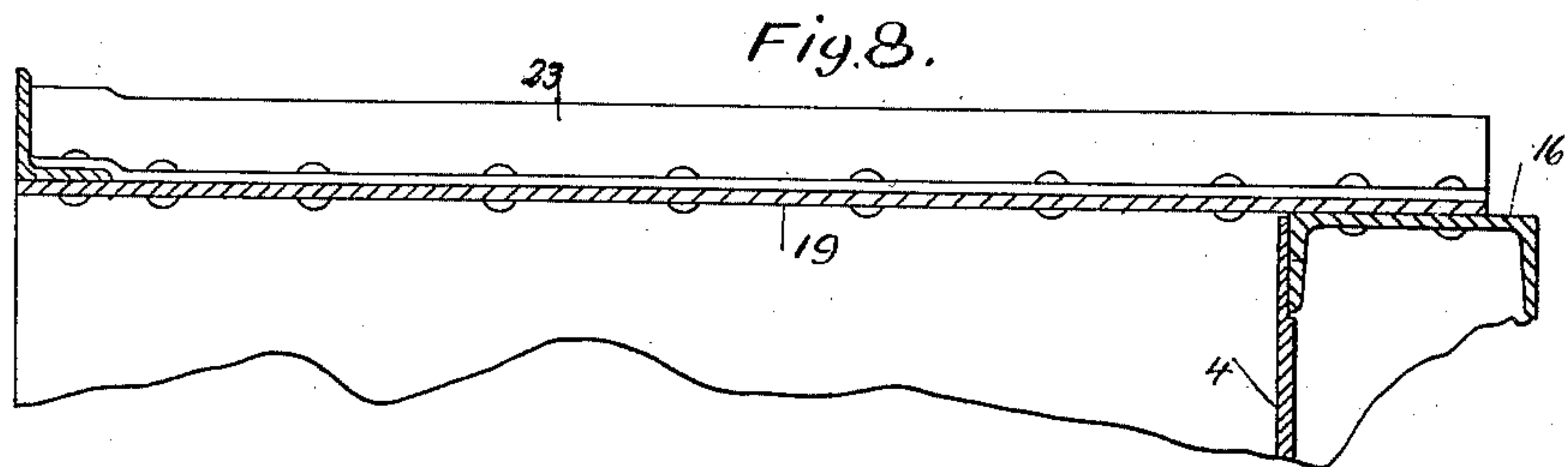
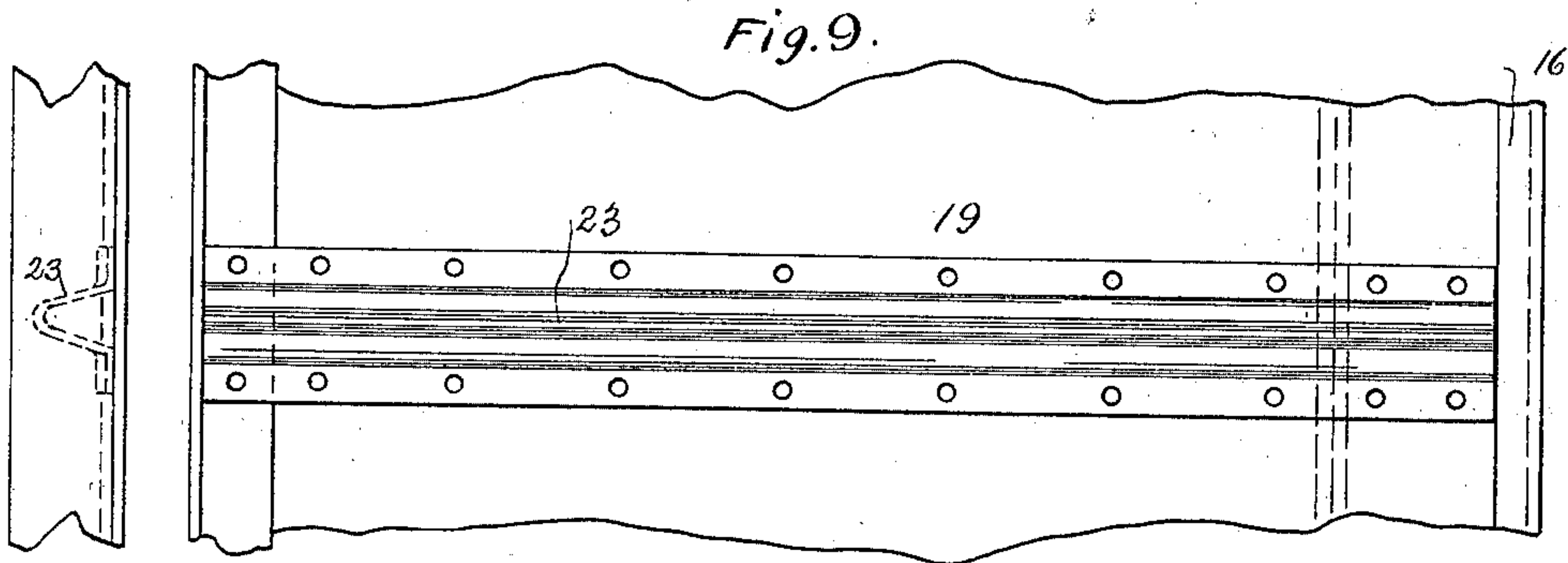
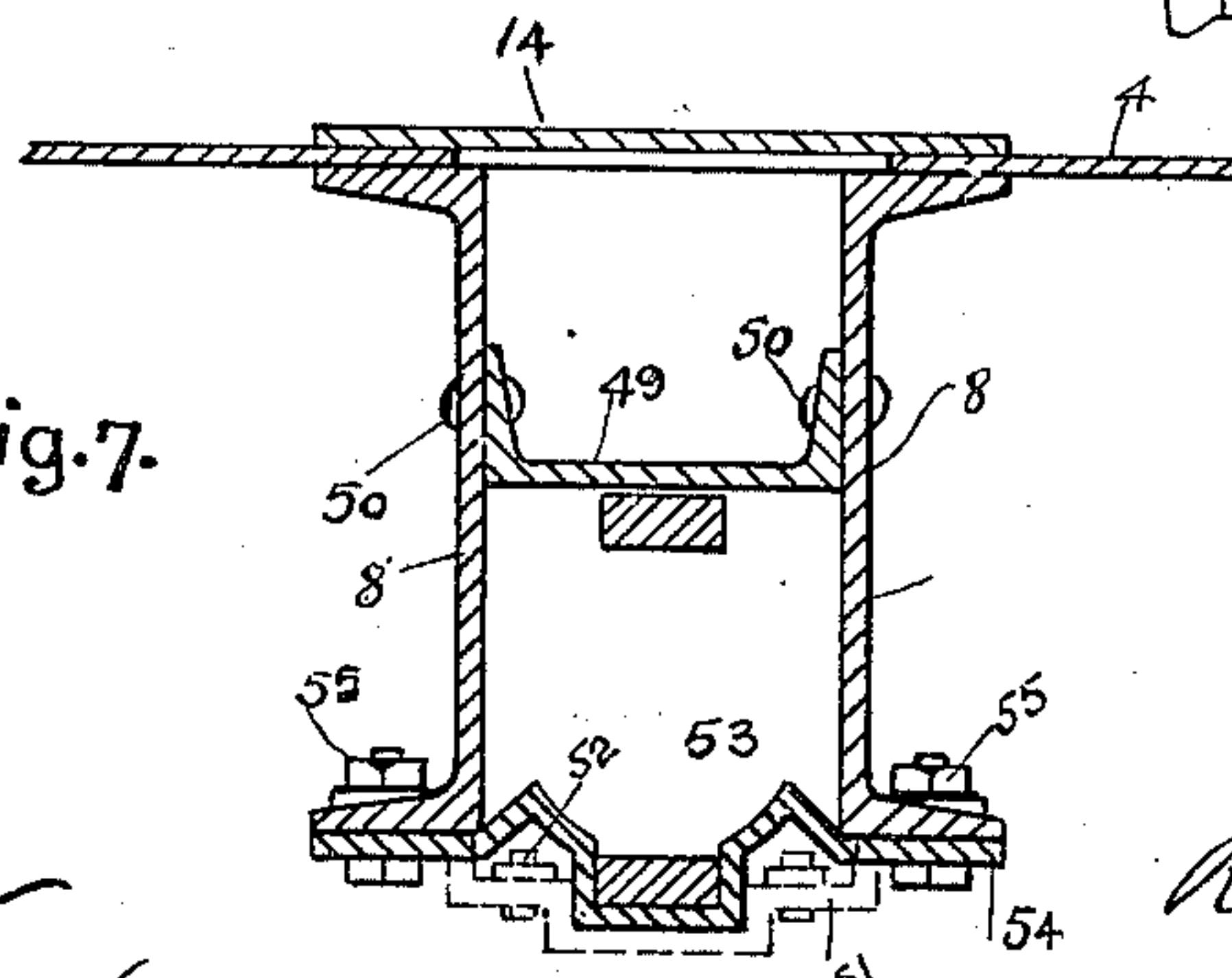


Fig. 7.



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UNITED STATES PATENT OFFICE.

RALPH V. SAGE, OF JOHNSTOWN, PENNSYLVANIA.

DROP-DOOR GONDOLA CAR.

SPECIFICATION forming part of Letters Patent No. 697,021, dated April 8, 1902.

Application filed October 3, 1901. Serial No. 77,367. (No model.)

To all whom it may concern:

Be it known that I, RALPH V. SAGE, a citizen of the United States, residing at Johnstown, in the county of Cambria and State of Pennsylvania, have invented certain new and useful Improvements in Drop-Door Gondola Cars, of which the following is a specification.

This invention relates to gondola cars, and especially to drop-bottom steel gondola cars, and has for its object to provide an improved car of this class which will possess points of advantage in facility of construction and simplicity of design and in the arrangement of the details, connections, and splices, so that in case of a wreck the car can be easily repaired without taking the entire car apart.

Another object of my invention is to provide in a car of the class described an improved organization of the body-bolsters and center sills at the center plates, whereby the buffing and drawing strains are transferred from the draft-rigging to the center sill and repairs in case of an end collision are made easy.

Another object of my invention is to provide in a car of the class described improved ends which will permit the end doors to be fixed or to be swung around against the side sills and leave the ends of the car perfectly clear or to drop down and remain flat.

Another object of my invention is to provide in a car of the class described improved drop-doors and operative connections which will be out of the way and leave the inside of the car entirely clear for the cargo, thereby increasing the capacity of the car and keeping the operative connections of the drop-doors out of the cargo, which renders them easier to manipulate and all parts of them always accessible.

Another object of my invention is to provide in a car of the class described improved draft-rigging and connections, whereby the draft-rigging is rendered easy to remove, and its construction is simplified and strengthened and rendered less expensive to manufacture.

Another object of my invention is to provide in a car of the class described an improved side stake which will tend to cause obstacles to glance off and will possess greater

strength and rigidity than the stakes now in use.

Figure 1 is a side elevation of a car embodying my improvements, partly broken away and partly in section. Fig. 2 is a plan view of the same, partly broken away. Fig. 3 is an end elevation of the same. Fig. 4 is a sectional view on the line *x x*, Fig. 1. Fig. 5 is a sectional view on the line *x x*, Fig. 2. Fig. 6 is an enlarged detail view of the draft-rigging and adjoining parts. Fig. 7 is an enlarged detail sectional view on the line *x x*, Fig. 6. Figs. 8 and 9 are detail views of my improved side stake.

In the drawings the same reference characters denote corresponding parts in the several views.

In the drawings I have illustrated a steel drop-bottom gondola car 1 of the usual ordinary form and construction, to which my improvements have been applied, and any one skilled in the art will understand that the following description is confined to the changes and modifications in the form, arrangement of parts, and construction of such ordinary car which I claim as my invention.

In the form shown in the drawings, and which may be the preferred form, if desired, my improvements comprise a center sill 2, formed of two channels 3, back to back, or an I-beam of equivalent section, to which the floor-plates 4 and floor-channels 5 are secured in any suitable manner, herein shown as rivets 6 and angle-plates 7. Each end of the center sill 2 is connected to the draft-rigging channels 8 by two channels 9, with a malleable casting 10 between them, which also forms a seat for the king-pin 11, one of the channels 9 being secured to the center-sill 2 in any suitable manner, herein shown as angle-plates 12 and rivets 13, and the other channel 9 in like manner to the draft-rigging channels 8. Plates 14 are secured at the top and bottom to the draft-rigging channels 8, the channels 9, and the center sill 2 in any suitable manner, herein shown as rivets 15, and serve to fasten the parts together and to transfer the buffing and drawing strains from the draft-rigging channels 8 to the center sill 2.

In the form shown in the drawings, and which, if desired, may be the preferred form,

the side sills 16 may be composed of channels the lower flange 17 of which may, if desired, be heavier and longer than the upper flange 18, which would serve as a carrying-girder and materially stiffen the side sill 16, said channels acting as the lower flange of the side plates 19, which may be extended down to the bottom of the outside of the channels and riveted thereto, so as to give a finished appearance to the sides. The side sills 16 extend beyond the side plates 19 at each end of the car sufficiently to receive the end sills 24 and make a suitable finish. Angles 20 may be riveted along the upper part of the sides to provide a top flange and angle-stiffeners 21 riveted at proper intervals along the sides and crimped at the top to cover the flange-angle 22 on the outside and give a suitable finish. Instead of the angle-stiffeners 21 a rolled-steel side stake 23, substantially V-shaped in cross-section, the end being slightly rounded and the ends extended to form flanges, may be used, in which case it may be applied simply as a straight piece or the ends bent over and brought in under the side sill 16 and the top crimped over the side angle at the top. The advantages of using the side stake 23 are that it presents no angles to catch against obstacles and that for the same amount of metal it would be stiffer and less liable to buckle. It is also evident that it may be used on any car in which side stakes are required.

At suitable points along the sides of the car, preferably over the trucks, the side plates 19 may be spliced, as at 25, to facilitate repairing in case of wreck.

The end doors 26 may be fixed permanently in the ends of the car by riveting their ends to the angles 27 at the ends of the sides; but preferably such doors 26 will be hinged at one end, as at 28, and provided at the bottom, near the other end, with a roller 28^a, so that they can be turned back against the side sills 16 and leave the ends of the cars entirely clear, in which case the rivets in the way of the swing of the doors 26 would have to be countersunk and suitable locking means, as a staple and hook 29, provided, or the doors 26 may be hinged at the bottom and turned down onto the floor of the car, out of the way, in which case suitable means, as a staple and hook 29, must be provided to hold the doors 26 in their raised position.

In the form shown in the drawings, and which, if desired, may be the preferred form, a channel 30 extends between two of the floor-channels 31 on each side of the center sill 2 and is secured to such floor-channels 31 in any suitable manner, herein shown as angle-plates 32 and rivets 33. Hinged to the bottom of one of the floor-channels 31 at 34 is a drop-door 35, adapted to close the opening between the side sill 16, the floor-channels 31, and the channel 30. On the opposite side of said opening a roller 36 is suitably mounted on the bottom of the floor-channel 31. Extending across beneath the car and in

proximity to said roller 36 is a shaft 37, journaled in the side sills 16 and provided near one end with a ratchet-wheel 38, adapted to engage a pawl 39, suitably mounted on the side of the car, said shaft 37 having its end squared and adapted to receive a crank-handle by which said shaft 37 may be turned. Eyebolts 40 are secured on said shaft 37 in any suitable manner, herein shown as by the passage through a hole in the shaft 37 of the shank 41 of the eyebolt 40 and the screwing of a nut 42 on the end of such shank 41. A malleable cast lug 43 is secured to the door 35 near the side opposite the hinges. One end of a chain 44 is secured to the lug 43 and the chain 44 carried over the roller 36 and its other end secured to the eyebolt 40. Thus the chain 44 may be adjusted by the eyebolt 40, and by turning the shaft 37 the chain 44 will be wound up upon it and the door 35 drawn up against the floor-channel 31, closing the opening.

I also provide improved draft-rigging, which comprises draft-rigging channels 8, the inner ends of which in the form shown, and which, if desired, may be the preferred form, are secured, as previously described, to the channel 9 and the top and bottom plates 14. Lugs 45, formed either of a suitable rolled section or, preferably, of one leg of a rolled channel which has been reinforced by an additional plate 46, are secured to the draft-rigging channels 8 in any suitable manner, herein shown by bolts 47, to take the follower-plates 48. To prevent any tendency of the draft-gear to bound up, I secure a channel or bent plate 49 between the draft-rigging channels 8 at a proper distance from the top in any suitable manner, herein shown as rivets or bolts 50. Another bent plate 51 is secured at the bottom to the draft-rigging channels 8 in any suitable manner, herein shown as bolts 52, and in case the Westinghouse friction draft-gear is used another bent plate 53 is used, having in cross-section a middle rectangular portion, circular portions adjoining such middle portions, and on the side of such circular portions a portion bent back and then outward to form flanges 54, by which it can be secured on the bottom of the draft-rigging channels 8 in any suitable way, herein shown as bolts 55. If desired, a plate 56, which may be spliced for convenience of repair, may be secured on the end sill 24 in any suitable manner, herein shown as bolts 57, which gives a finished appearance and at the same time reinforces and strengthens the sill 24 and can be removed to permit the draft-rigging to be easily removed.

The operation and advantages of my improved steel gondola car are easily understood and appreciated. By the use of two channels back to back or an I-beam of similar section for the center sills 2 and channels for the side sills 16—that is, ordinary merchantable shapes—no special machinery or other preparation is required to produce them, and they can be readily procured of

any desired dimensions easily, promptly, and at relatively small cost, while their form gives the greatest strength to resist transverse strains possible for the amount of metal employed. They are also readily secured to other parts. The separation of the draft-rigging channels 8 from the center sill 2 and the position and manner of connecting them and at the same time providing a seat for the king-pin 11 offer many advantages in the way of distribution of strain and combination of strength. The lugs 45, if made in the preferred form of one leg of a channel reinforced, are likewise readily procured at small cost and are of very convenient and effective form, and the draft-rigging as a whole is simple, strong, durable, and easily taken apart and repaired. The spliced sides render them easy of repair, and the location of the drop-doors 35 and their connections enlarge the capacity of the car by freeing its interior and are out of the cargo, when the car is loaded, and easier of access and manipulation at all times. The organization of the end doors 26 so that the ends of a car can be practically freed of obstruction is of great advantage, as railroad men will readily understand. The whole car by the improved construction and organization of its parts is rendered easier of construction and at less cost and less liable to injury, and when injured the injury is localized and limited to a great extent and repairs made easy, and the various parts are easily gotten at and removed and replaced.

I do not desire to be understood as limiting myself to the details of construction and arrangement of parts as herein described and illustrated, as it is manifest that variations and modifications may be made in the details of construction and arrangement of parts, in the adaptation of the device to various conditions of use, without departing from the scope and spirit of my invention and improvements. I therefore reserve the right to all such variations and modifications as properly fall within the scope of my invention and terms of the following claims.

Having thus described my invention, I claim and desire to secure by Letters Patent—

1. The combination with a car-body, of a center sill comprising two channels back to back or an I-beam of the same section, draft-rigging sills comprising two channels, of a pair of spaced channels secured at their opposite ends to said draft-rigging sills and the inner of said spaced channels also secured to said center sill, a body-bolster secured to the outside of said draft-rigging sills, and top and bottom connection-plates secured to said center and draft-rigging sills and to said bolster.

2. In a steel gondola car, an improved draft-rigging comprising draft-rigging channels; lugs formed of one leg of a channel reinforced and secured to the draft-rigging channels, said lugs adapted to take the follower-

plates; a channel secured between the draft-rigging channels near the top; and bent plates secured to the bottom of the draft-rigging channels.

3. An improved steel gondola car, comprising a center sill formed of two channels, back to back, or an I-beam of the same section; draft-rigging embodying draft-rigging channels; a pair of channels, secured to the draft-rigging channels and to the center sill; a malleable casting between such pair of channels, adapted to receive the king-pin; and plates secured at the top and bottom of said channels, the draft-rigging channels and center sill.

4. An improved steel gondola car, comprising spliced sides and end doors hinged at one side and provided at the bottom near the other side with a supporting-roller.

5. An improved steel gondola car, comprising side sills formed of channels and extending beyond the ends of the side plates; end sills secured in the ends of the side sills; side plates extending down to the bottom of the outside of the side sills, the sides being spliced at intervals; rolled-steel side stakes, V-shaped in cross-section; an angle secured along the top of the sides to form the top flange; end doors hinged at one side and provided at the bottom near the other side with a roller, said doors adapted to fold back against the sides of the car and means for fastening the door in a closed position.

6. An improved steel gondola car, comprising center sills formed of two channels, back to back, or an I-beam of the same section; side sills formed of channels and extending beyond the ends of the side plates; end sills secured in the ends of the side sills; side plates extending down to the bottom of the outside of the side sills, the sides being spliced at intervals; an angle secured along the tops of the sides, to form the top flange; rolled-steel side stakes, V-shaped in cross-section, secured at intervals to the sides as stiffeners; end doors hinged at one side and provided at the bottom near the other side with a roller; a drop-door hinged to the bottom of one of the floor-channels; and means for closing and holding said drop-door closed.

7. An improved steel gondola car, comprising center sills formed of two channels, back to back, or an I-beam of the same section; side sills formed of channels and extending beyond the ends of the side plates; end sills secured in the ends of the side sills; side plates extending down to the bottom of the outside of the side sills and secured thereto; end doors hinged in the ends of the car; drop-doors hinged to the bottom of one of the floor-channels; a shaft; chains secured at one end to the shaft and at the other end to the drop-doors; and draft-rigging embodying channels secured to each other and to the center sills and lugs formed of one leg of a channel reinforced, said lugs being secured to the channels and adapted to take the follower-plates.

8. An improved steel gondola car, comprising center sills formed of two channels, back to back, or an I-beam of the same section, side sills formed of channels and extending beyond the ends of the side plates; end sills secured in the ends of the side sills; side plates extending down to the bottom of the outside of the side sills and secured thereto; end doors hinged in the ends of the car; drop-doors hinged to the bottom of one of the floor-channels and adapted, when closed, to abut against another; a shaft journaled in the side sills and extending transversely beneath the car; rollers secured to the floor-channel against which the drop-doors abut; malleable cast lugs secured to the drop-doors near their free edges; chains secured to such lugs and to the shaft and passing over the rollers; and means for operating the same.

9. An improved steel gondola car, comprising center sills formed of two channels, back to back, or an I-beam of the same section; side sills formed of channels and extending beyond the ends of the side plates; end sills secured in the ends of the side sills; side plates extending down to the bottom of the outside of the side sills and secured thereto; end doors hinged in the ends of the car; drop-doors hinged to the bottom of one of the floor-channels and adapted to abut against another; a shaft journaled in the side sills and extending transversely beneath the car; rollers secured to the channel against which the drop-doors abut; malleable cast lugs secured

to the drop-doors near their free edges; chains secured to said lugs and shaft and passing over the rollers; draft-rigging embodying draft-rigging channels, and lugs formed of one leg of a channel reinforced and secured to said draft-rigging channels to take the follower-plates; a pair of channels, one secured to the draft-rigging channels and the other to the center sills; a malleable casting between such pair of channels, adapted to form a seat for the king-pin; and top and bottom plates secured to said pair of channels, draft-rigging channels and center sills.

10. In a steel gondola car, the combination with, an improved draft-rigging comprising draft-rigging channels, lugs formed of one leg of a channel reinforced and secured to the draft-rigging channels, said lugs adapted to take the follower-plates; and a channel secured between the draft-rigging channels near the top, of a bent plate having a rectangular central portion, circular portions adjoining such central portion and side portions bent back and outward to form flanges adapted to be secured to said draft-rigging channels, said bent plate adapted to receive the friction draft-gear.

In testimony whereof I have signed my name in the presence of the subscribing witnesses.

RALPH V. SAGE.

Witnesses:

WM. P. PARKER,
W. M. MCKEE.