

No. 688,809.

Patented Dec. 10, 1901.

J. M. HANSEN.
CENTER DUMP BALLAST CAR.

(Application filed Dec. 21, 1900.)

(No Model.)

4 Sheets—Sheet 1.

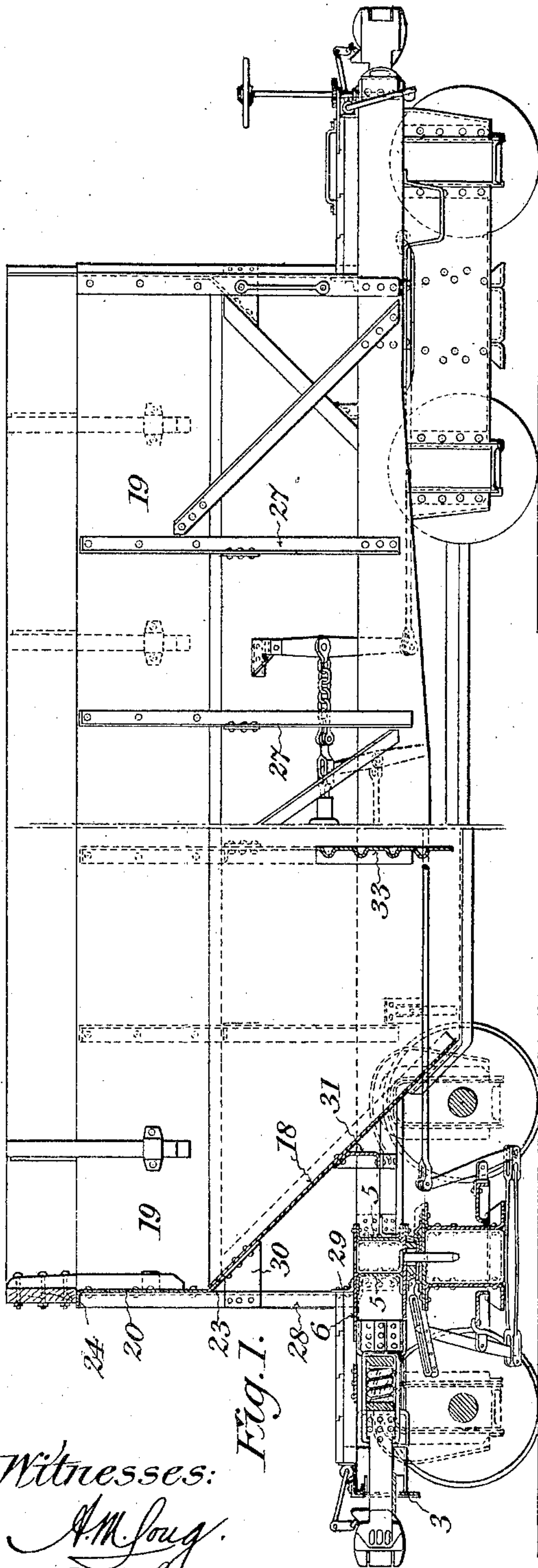


Fig. 1.

Witnesses:

A. M. Long.
A. J. Scott

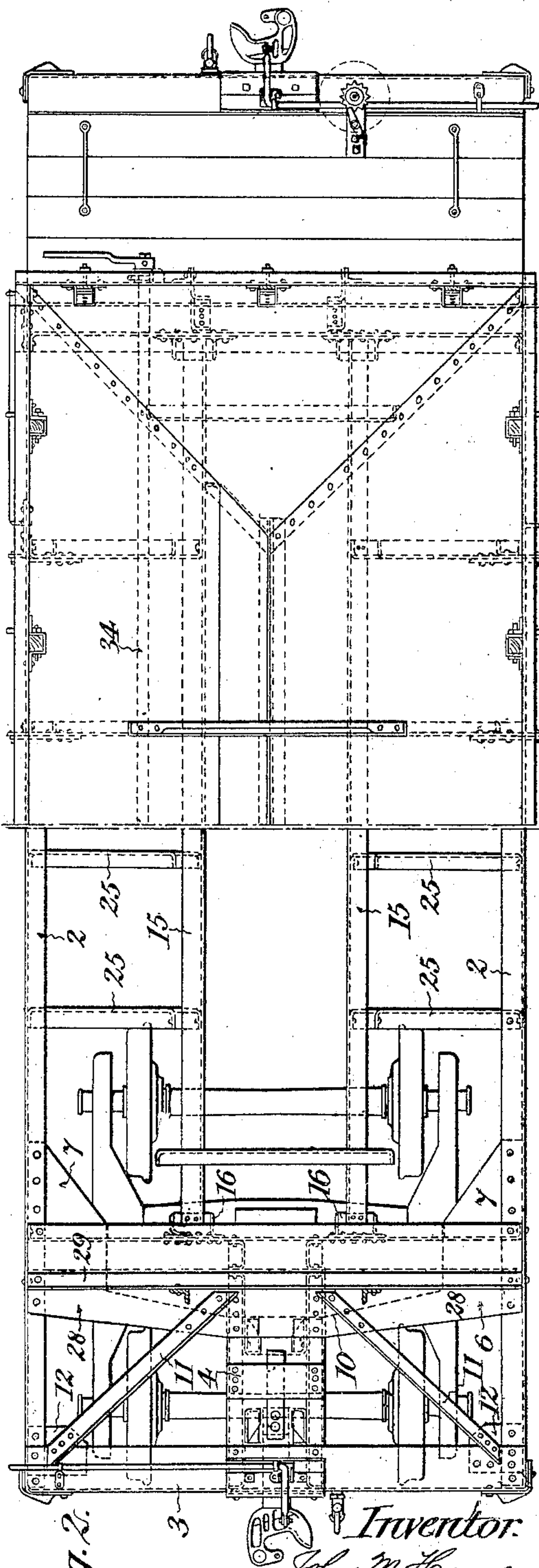


Fig. 2.

Inventor:

John M. Hansen
by W. H. Finckel
Att'y.

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Fig. 3.

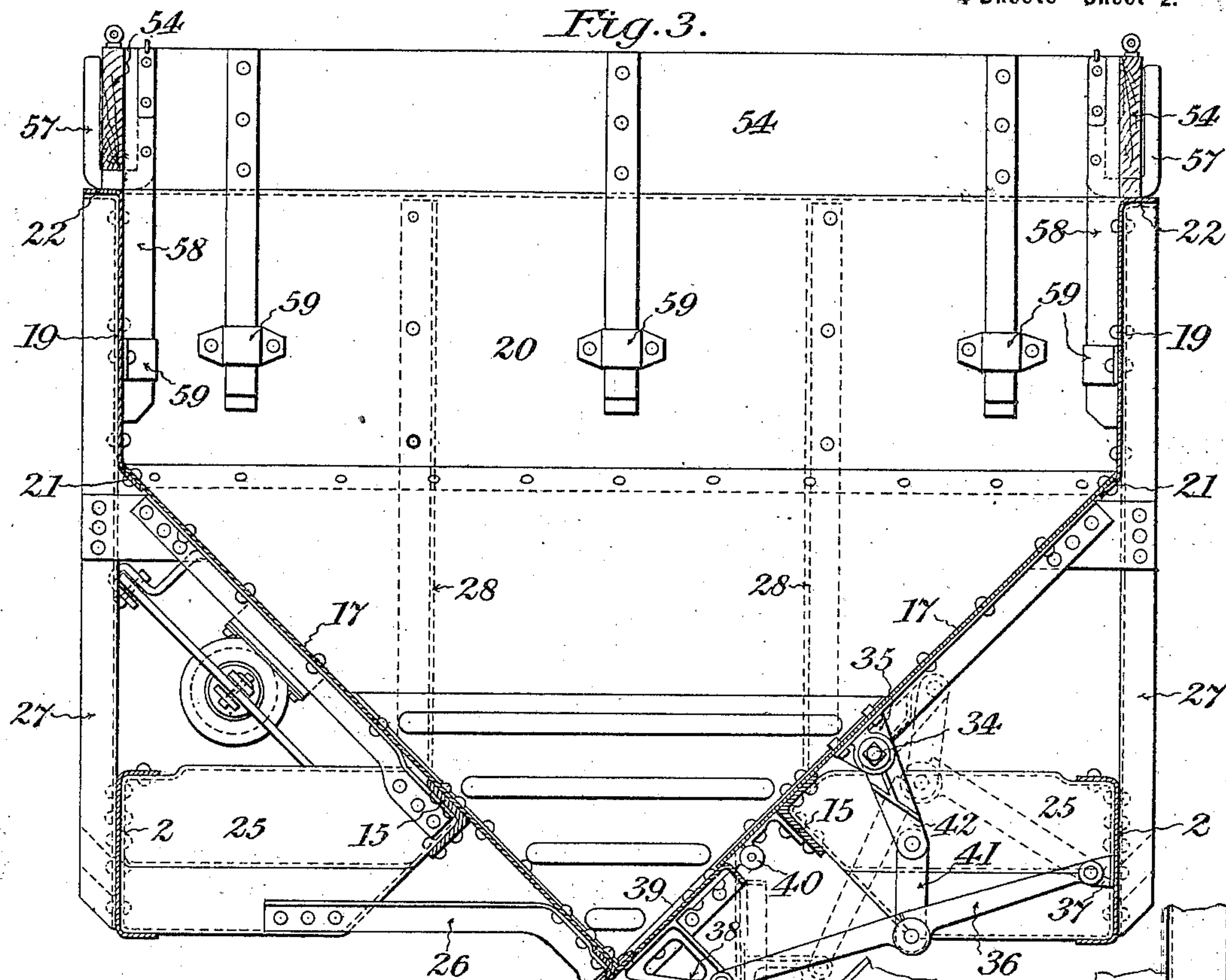
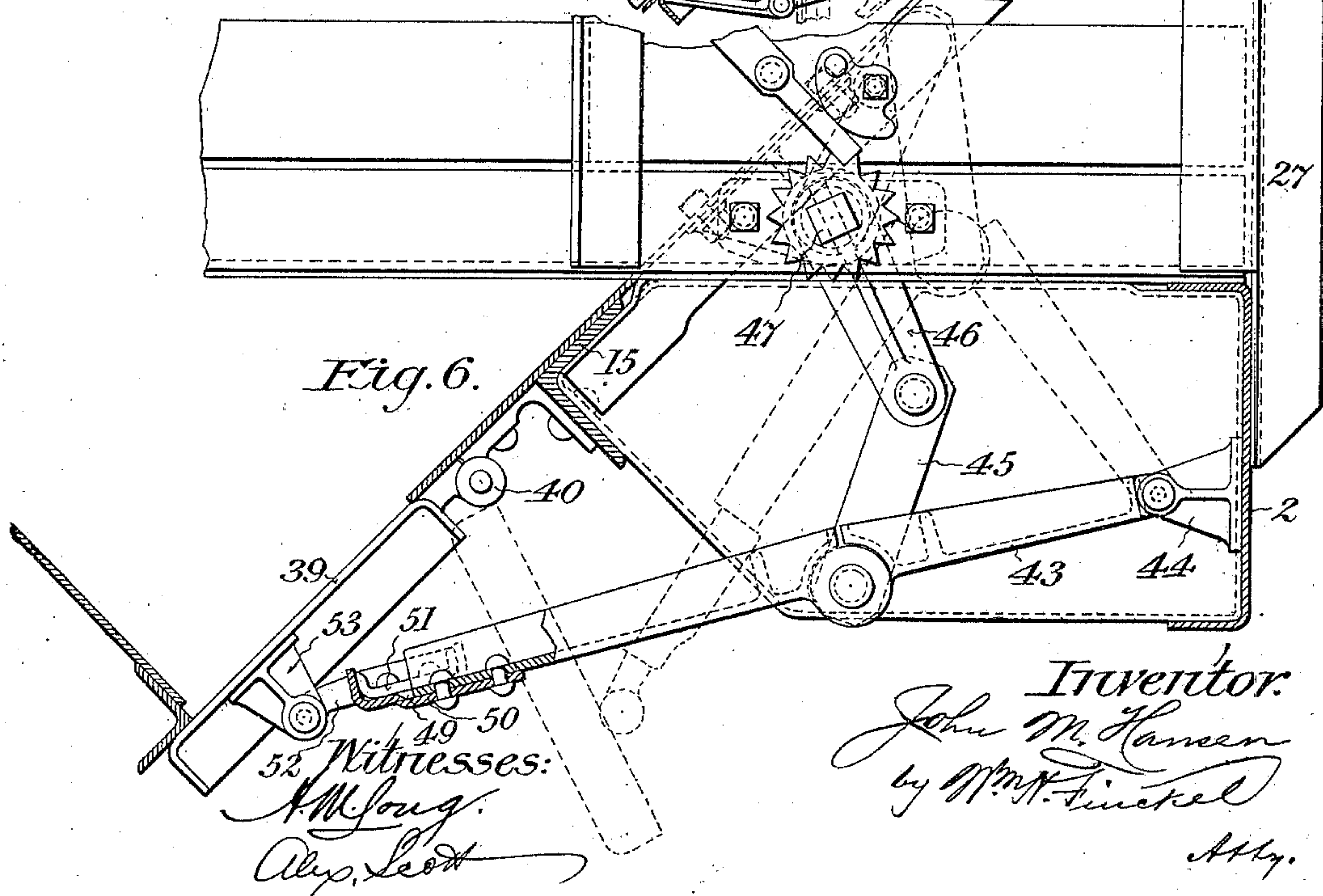


Fig. 6.



Inventor:
John M. Hansen
by M. M. Finckel
Atty.

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Fig. 4.

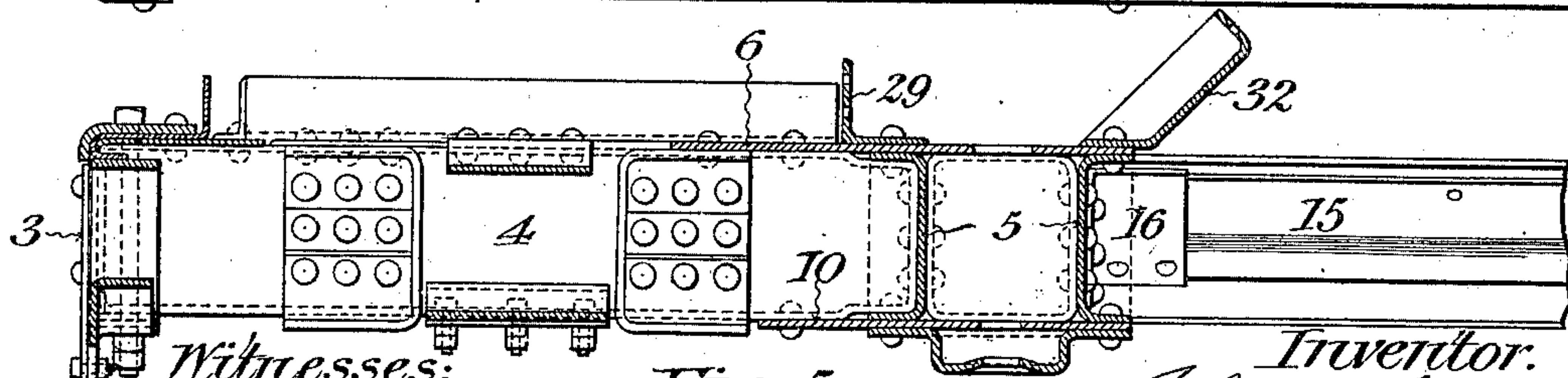
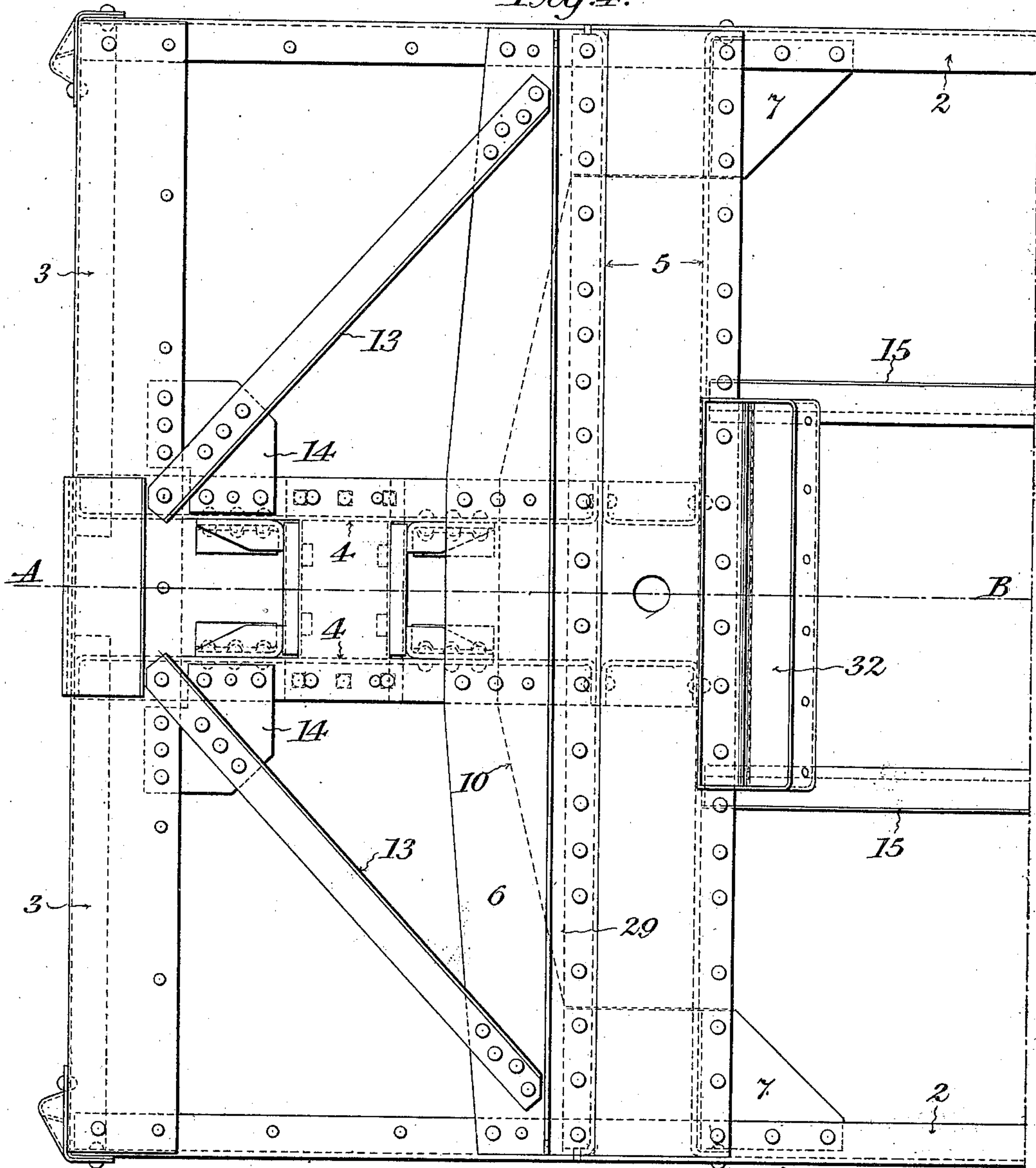


Fig. 5.

Witnesses:

Wm. Long
Alex. Scott

Inventor.

John M. Hansen
by Wm. H. Finckel
Atty.

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Fig. 7.

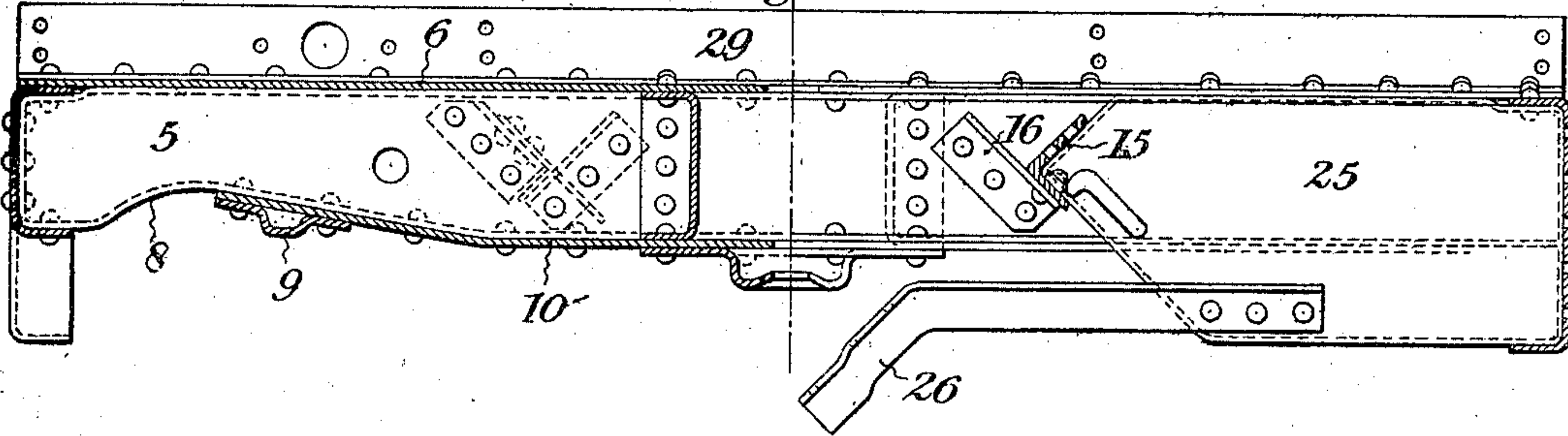


Fig. 8.

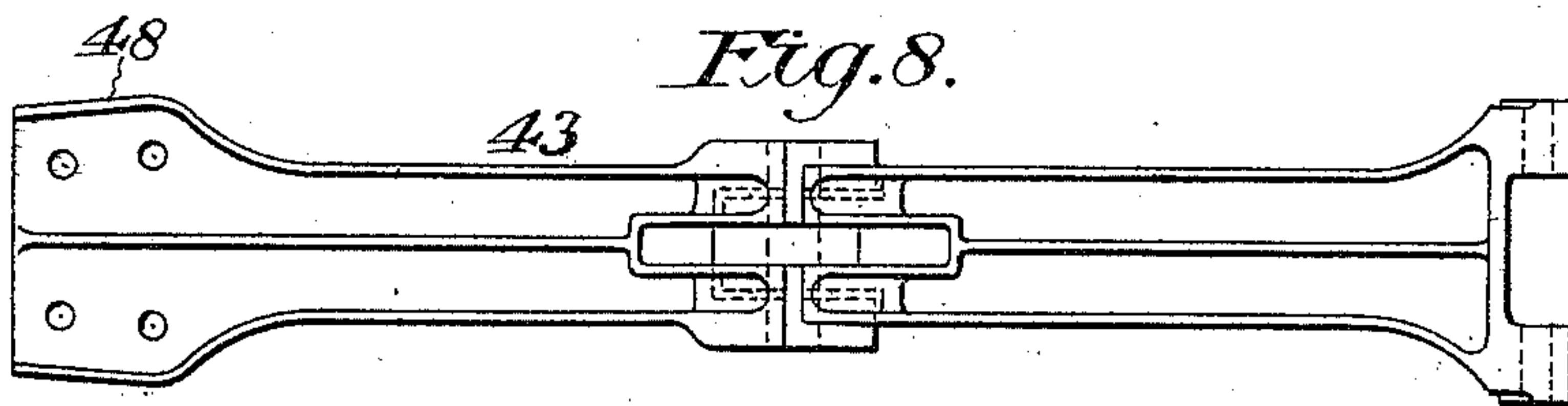


Fig. 9.

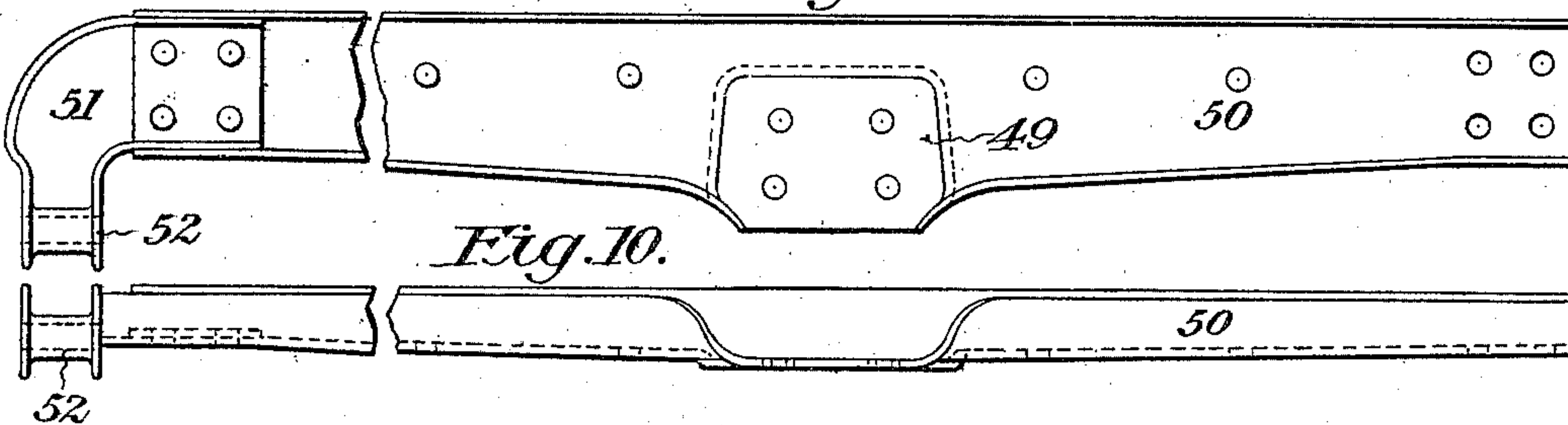


Fig. 10.

Fig. 13.

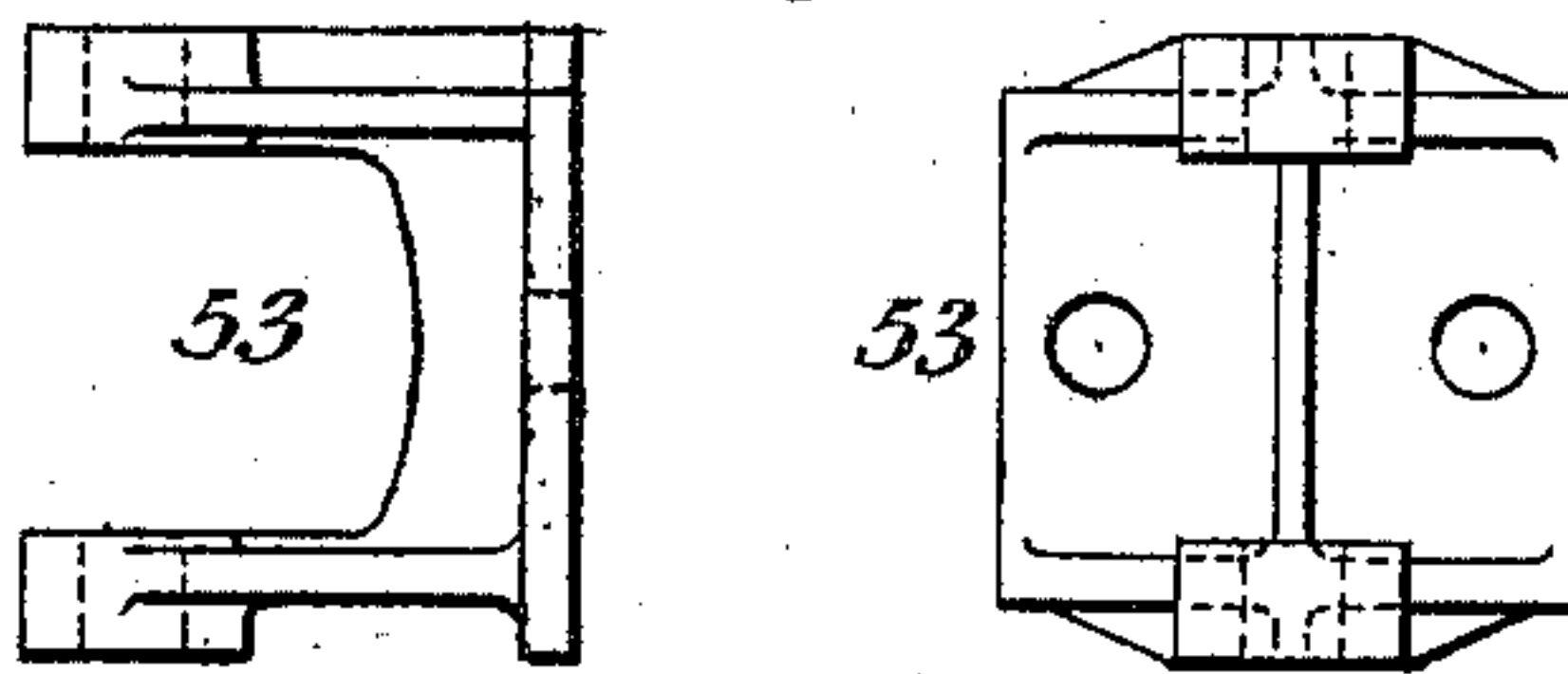


Fig. 11.

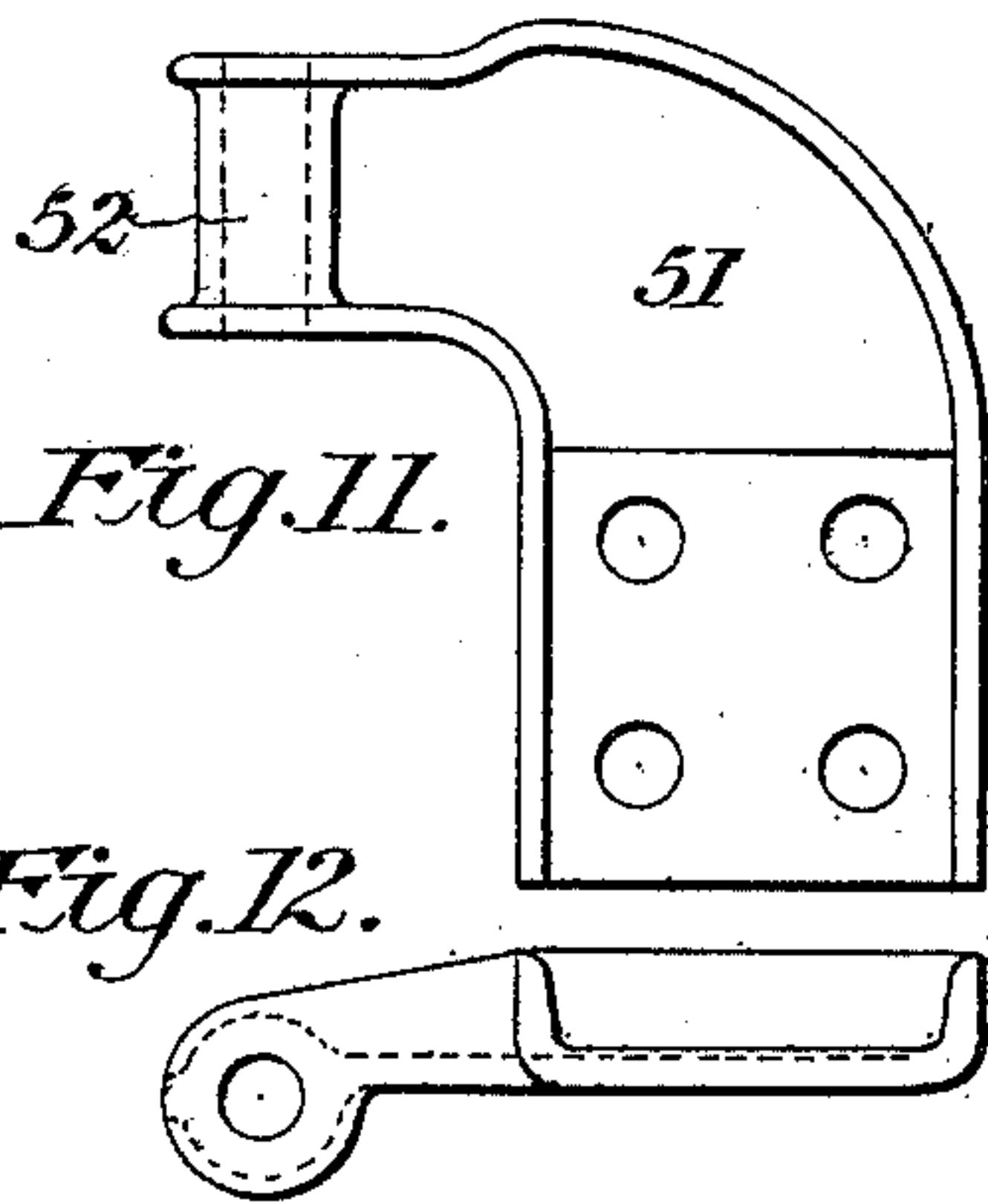
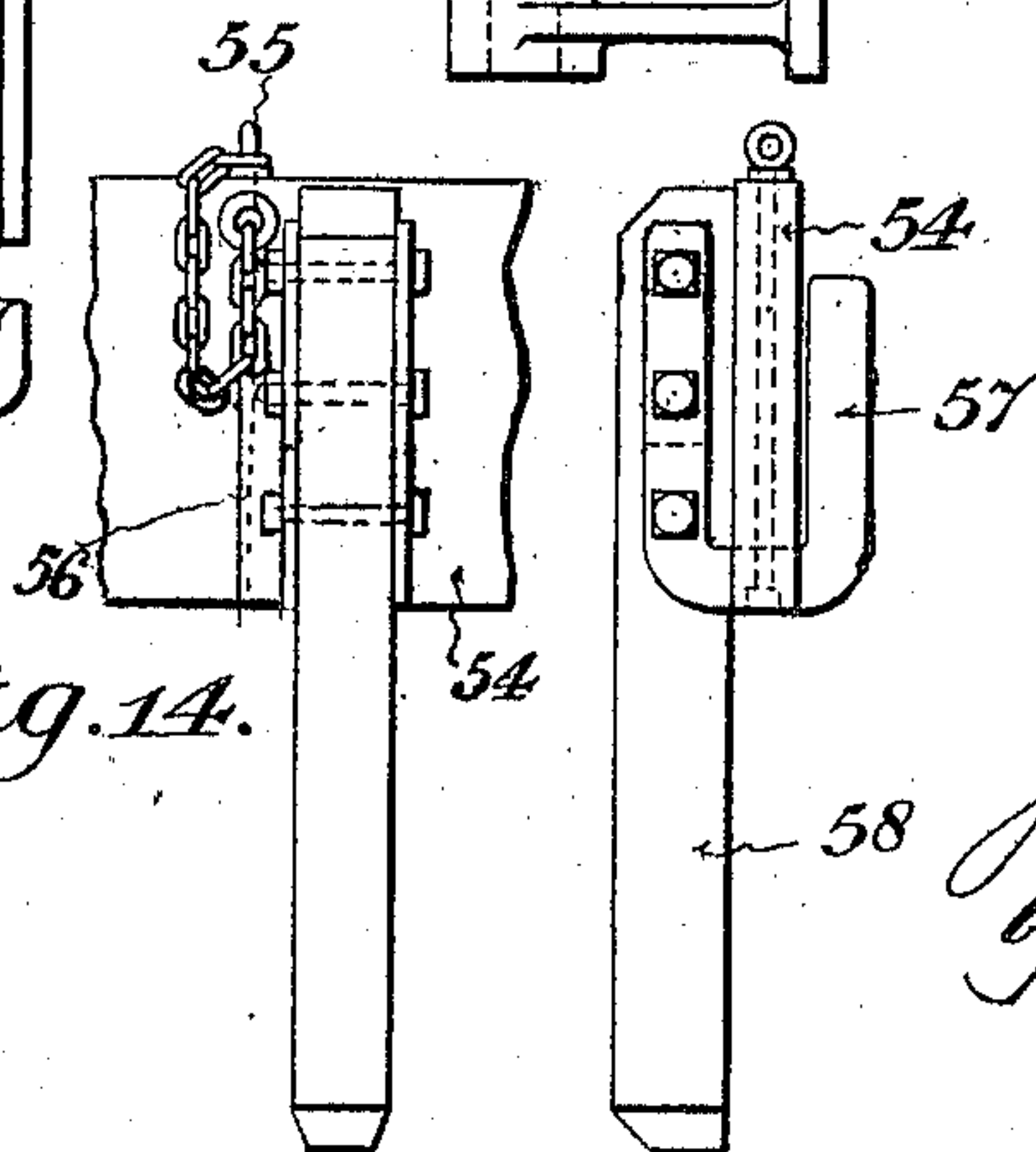


Fig. 12.

Fig. 14.



Witnesses:

A. M. Long
Alfred Scott

Inventor:

John M. Hansen
by Wm. F. Finckel
Atty.

UNITED STATES PATENT OFFICE.

JOHN M. HANSEN, OF BELLEVUE, PENNSYLVANIA, ASSIGNOR TO PRESSED STEEL CAR COMPANY, OF PITTSBURG, PENNSYLVANIA, A CORPORATION OF NEW JERSEY.

CENTER-DUMP BALLAST-CAR.

SPECIFICATION forming part of Letters Patent No. 688,809, dated December 10, 1901.

Application filed December 21, 1900. Serial No. 40,649. (No model.)

To all whom it may concern:

Be it known that I, JOHN M. HANSEN, a citizen of the United States, residing at Bellevue, in the county of Allegheny and State of Pennsylvania, have invented a certain new and useful Improvement in Center-Dump Ballast-Cars, of which the following is a full, clear, and exact description.

This invention relates to that class of railway-cars which are used for conveying ballast and the like and which are commonly known as "center-dump ballast-cars."

The object of the invention is to construct a center-dump ballast-car of metal, preferably plate-steel or sheet-steel, with the parts pressed to shape and assembled by riveting. The novel features are the underframe, adapted to receive the peculiarly-shaped body and reinforced to resist the strains incident to the disposal of the load in such a body, the gate-operating mechanism, and the provision of extension sides for the body, all as I will proceed now more particularly to set forth and finally claim.

In the accompanying drawings, illustrating my invention, in the several figures of which like parts are similarly designated, Figure 1 is a half-section and elevation of one form of car containing my improvements, and Fig. 2 is a top plan view with the body omitted from the left-hand end and showing the underframe. Fig. 3 is a cross-section, on a larger scale, showing one form of gate-operating mechanism. Fig. 4 is a plan view similar to the left-hand end of Fig. 2, illustrating another arrangement. Fig. 5 is a longitudinal section taken substantially in the plane of line A B of Fig. 4. Fig. 6 is a vertical section illustrating a preferred form of gate-operating mechanism. Fig. 7 is a half-section and elevation of the bolster. Fig. 8 is a top plan view of part of the toggle-lever mechanism of the gate-operating mechanism. Fig. 9 is a plan view, and Fig. 10 a side view, of a spreader forming part of the gate-operating mechanism. Fig. 11 is a top plan view, and Fig. 12 an end elevation, of an ear for the spreader. Fig. 13 shows in plan and side view a fulcrum for the ear of Figs. 11 and 12.

Fig. 14 is a detail illustrating the mounting of the extension sides.

The trucks, the couplers, and the air-brake mechanism (illustrated in part in Figs. 1 and 2) may be of any approved construction, and therefore need no detailed description in this specification. The underframe comprises side sills 2 and end sills 3 and draft-rigging sills 4, also of approved construction. The body-bolsters are of box-girder type, and the novelty in their construction is as follows: Between the side sills are arranged the transverse channeled beams 5, which constitute the foundation of the body-bolster, and these beams 5 are covered in at top by a plate 6, which is riveted to the upper flanges of the beams 5 and is of greatest width in the plane of the draft-rigging sills 4 4, the same being also riveted to the flanges of these sills 4 4 and to the flanges of the side sills 2. Also at the top are applied gusset-plates 7 of triangular outline and which are riveted to the upper flanges of the inner beam 5 and the upper flanges of the side sills. The ends of the beams 5 are dished at 8 to provide clearance for the wheels, and next to these dished portions are secured the side bearings 9. Between the side bearings and underlying them is the bottom cover-plate 10, of the outline shown by dotted lines in Fig. 2, and, like the plate 6, extending outwardly and having its greatest width in the plane of the draft-rigging sills. By this construction of top and bottom cover-plates and gussets the underframe, including the bolster, is greatly reinforced to resist the shocks and strains imposed upon this portion of the car.

As shown in Fig. 2, the underframe may be further strengthened by the use of oblique braces 11, which diverge from the bolster at the draft-rigging sills toward the angles formed by the junction of the side and end sills, and these junctions may be further reinforced by gusset-plates 12; or, as shown in Fig. 4, these braces (designated 13 in that figure) may diverge from the draft-rigging sills at the end sill inwardly toward the junction of the bolster with the side sills, and suitable gusset-plates 14 may be arranged in the

angles between the draft-rigging sills and the end sills. In either case the oblique braces will be riveted to the top cover-plate and the gusset-plates.

5 As shown by reference to Figs. 2 and 4, the center sills 15 are out of longitudinal alignment with the draft-rigging sills. These center sills are preferably composed of angle steel or iron, rolled or wrought, and their ends
10 are bolted or riveted to brackets 16, which in turn are secured to the beams forming the bolsters. These center sills are arranged at an incline corresponding to the incline of the bottom of the body, as shown more particu-
15 larly in Fig. 3.

The body has the sides 17 of its bottom convergent and meeting in substantially the longitudinal center of the underframe, while the ends 18 are inclined toward the center.
20 Above these inclined portions the body is extended to form parallel sides 19 and parallel ends 20. These sides 19 have bottom flanges 21 (see Fig. 3) to receive the plates forming the bottom 17, and the upper edges of
25 the sides are bent outwardly to form horizontal flanges 22. Similarly the ends 20 have bottom flanges 23 and top horizontal flanges 24. These upper horizontal flanges 22 and 24 greatly strengthen the sides of the car.

30 As already stated, the body is mounted immediately upon the center sills of the underframe, and in order to distribute the load and pressure to the side sills 2 the said side sills may have interposed between them and
35 the body or center sills the transoms 25 in any of a variety of ways, some of which are shown in Figs. 2, 3, and 7, and the braces 26 may project from these transoms to the inverted apical end of the body, as shown in
40 Figs. 3 and 7, and upright braces or posts 27 may connect the vertical sides of the car-body with the said side sills, as shown more particularly in Figs. 1 and 3. The ends of the car also may have vertical posts or braces
45 28, which are secured to an angle-piece 29, riveted on top of the bolsters, and horizontal braces 30 may connect the posts 28 with the inclined ends of the bottom of the body. Transoms 31, as shown in Figs. 1 and 2, may
50 be interposed between the center sills and the inclined ends of the body, or, as shown in Figs. 4 and 5, equivalent transoms 32 may be riveted to the top of the bolsters and to the inclined ends of the bottom. Each angle-
55 piece 29 extends the whole width of the car and serves for making connections of the braces and the vertical corner-posts corresponding to the end posts 28.

The sides of the bottom are tied together
60 by means of horizontally-corrugated gusset-plates 33, vertically arranged substantially as shown in Figs. 1 and 2.

Two forms of door-operating mechanism are herein shown, differing mainly, however,
65 in details of construction and being substantially the same in principle.

Referring now to Fig. 3, 34 is a shaft supported in bearings 35, which are attached to the inclined side of the car and provided with any suitable rotating mechanism, such
70 as a lever, and also supplied with any approved locking mechanism, such as a pawl and ratchet, as, for example, illustrated in Fig. 6. Any number of rule-joint levers 36 are pivoted at their outer ends to bearings 37,
75 attached to the side sill 2, and the bearings 38 attached to a door 39, hinged at 40 to the side of the bottom. The levers 36 are supplied with links 41 at their joints, which in turn are connected with a crank 42 on the
80 shaft 34, so that by rotation of the shaft 34 the levers may be drawn into the dotted-line position, Fig. 3, to open the door or gate and may be forced into the full-line position to close the gate, and the ratchet-and-pawl
85 mechanism may be such as to hold positively the door-operating mechanism in either of these two positions.

As shown in Fig. 6, a somewhat modified form of door-operating mechanism may be em-
90 ployed, and in this instance there may be one or more levers of the rule-joint or toggle variety 43, fulcrumed at 44 to the side sill and connected by a link 45 with a crank-arm 46 on an operating-shaft 47, secured in bearings
95 fixed to the bottom of the car, and the end 48 of the lever 43, next adjacent to the gate or door, may be fitted in a pocket 49 in a beam 50, which is hereinafter designated a "spreader," and this spreader may reach to-
100 ward opposite ends of the gate or door and be secured thereto by ear-pieces 51, riveted in the ends of the spreader 50 and projecting laterally therefrom in the form of pintle-eyes
105 52, which pintle-eyes are secured in brackets or bearings 53, which in turn are secured to the door or gate. By the use of this last-mentioned construction and as shown in Fig. 6 in position and the details of which are shown in Figs. 8 to 13, inclusive, it may
110 be necessary to employ only one lever 43 for operating the door or gate. Substantially this form of door-operating mechanism constitutes part of the subject-matter of the Schoen and Hansen Patent No. 647,908, dated
115 April 17, 1900.

It is oftentimes desirable to extend the vertical sides and ends of a ballast dump-car of this character, and for this purpose I provide the movable extensions 54, which may be
120 boards connected by eyebolts 55 and chains 56 with the sides of the body and adapted to be dropped inside of the body when not in use and to be set up on the horizontal flanges 22 and 24 to raise the height of the sides and
125 ends and may be supported and braced in this position by means of U-shaped hooks 57, secured to stakes 58, which may be movably or permanently applied in stake-pockets 59,
130 secured to the inner sides of the sides and ends of the body, as shown more particularly in Fig. 3. The end extensions, as indicated in

Fig. 1, may be permanently applied to the stakes and remain permanently in position, if desired.

As indicated in Fig. 3, the air-brake mechanism may be applied alongside of one of the inclined bottom sides of the car.

Plate or sheet steel or other equivalent metal of sufficient strength and stiffness and pressed to shape may be used in the construction of most or all of the parts herein shown and described, although the center sills may be rolled and the various brackets and bearings may be castings.

By the construction of underframe herein described I obtain great strength and stiffness and also great load-sustaining capacity, with facility of repair, and by the gate-operating mechanism, by means of which the extent of opening of the gate is always under control, I am enabled to distribute ballast in any desired manner and quantity, and by the use of the extension sides I can adapt the capacity of the car to the material of the load.

While the underframe herein shown and described is designed especially for dump ballast-cars, I do not limit its use to that one character of car. I therefore reserve the novel features of the underframe of itself considered for a division of this case, filed August 21, 1901, Serial No. 72,832, to which reference is made. I also reserve for a division of this case, filed August 28, 1901, Serial No. 73,612, the claims for the body-bolster, of itself considered, and I also reserve for a division of this case, filed August 29, 1901, Se-

rial No. 73,729, the claims for the extension sides.

What I claim is—

1. The combination of an underframe, having bolsters erected therein and as a part thereof, angle-pieces secured to the said bolsters, diagonally-arranged center sills interposed between the bolsters, and a body having inclined sides and ends supported upon such center sills and connected with the angle-pieces, substantially as described.

2. In a center-dump car, the combination of a hinged door or gate, one or more toggle-levers fulcrumed to the side sills of the car at one end and connected with the gate at the other end, an operating-shaft and locking mechanism therefor, and link connections interposed between the said shaft and toggle-levers for actuating the door or gate and for holding it in any desired position, substantially as described.

3. In a center-dump ballast-car, the combination of a suitable underframe and body erected thereupon, and having an inverted-V-shaped bottom, and vertical transverse horizontally-corrugated gusset-plates secured at intervals crosswise of said bottom and within the body, substantially as described.

In testimony whereof I have hereunto set my hand this 19th day of December, A. D. 1900.

JOHN M. HANSEN.

Witnesses:

W. D. GEORGE,
WM. BIERMAN.