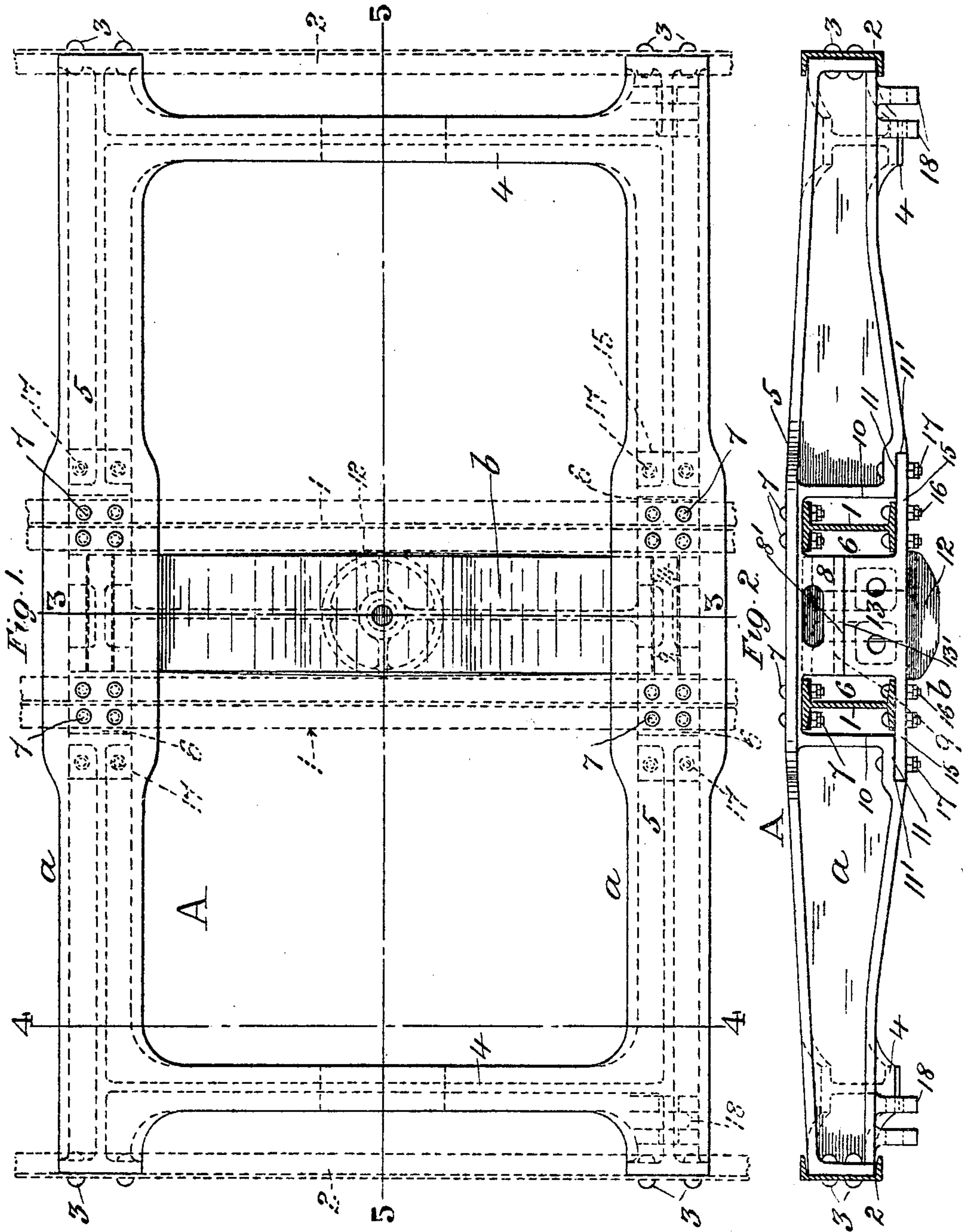


C. H. HOWARD.  
CAR BOLSTER.

APPLICATION FILED MAY 1, 1905.

5 SHEETS—SHEET 1.



WITNESSES

J. M. Bentam.  
H. M. Pflager.

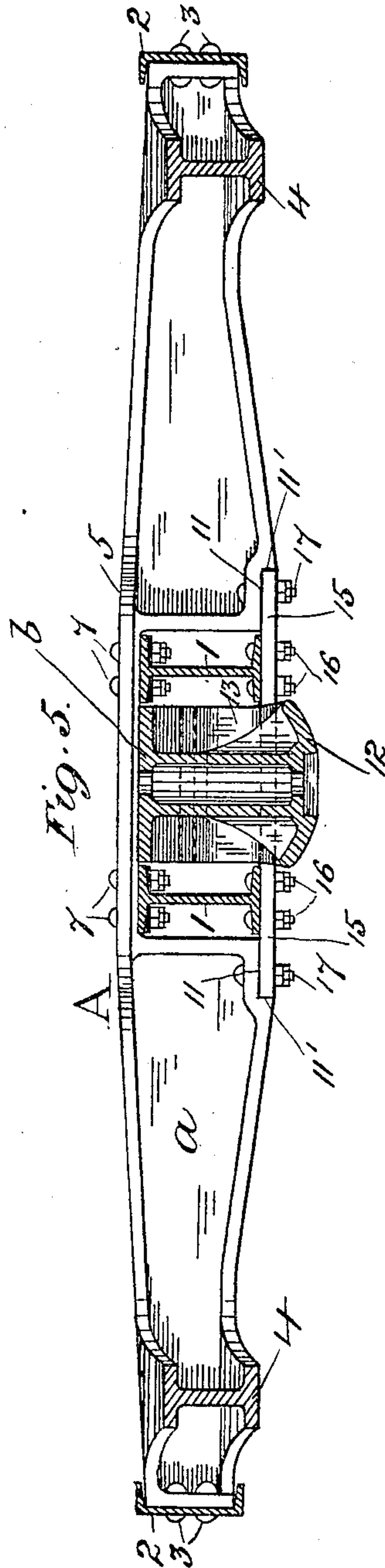
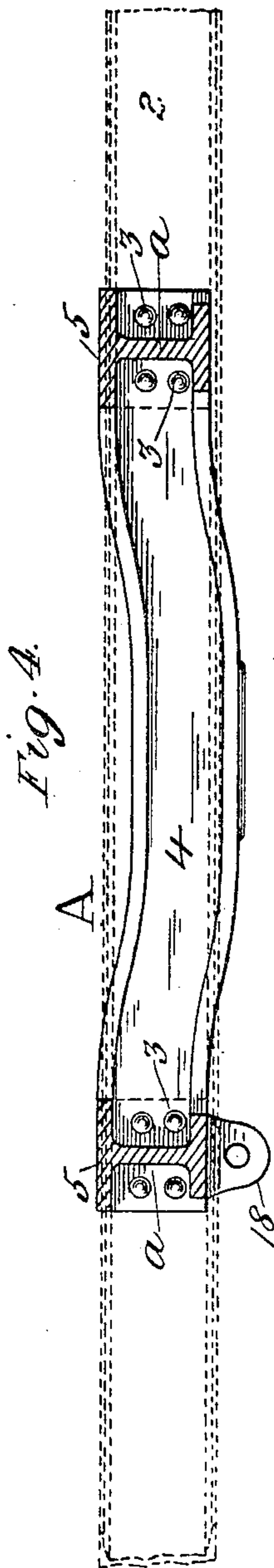
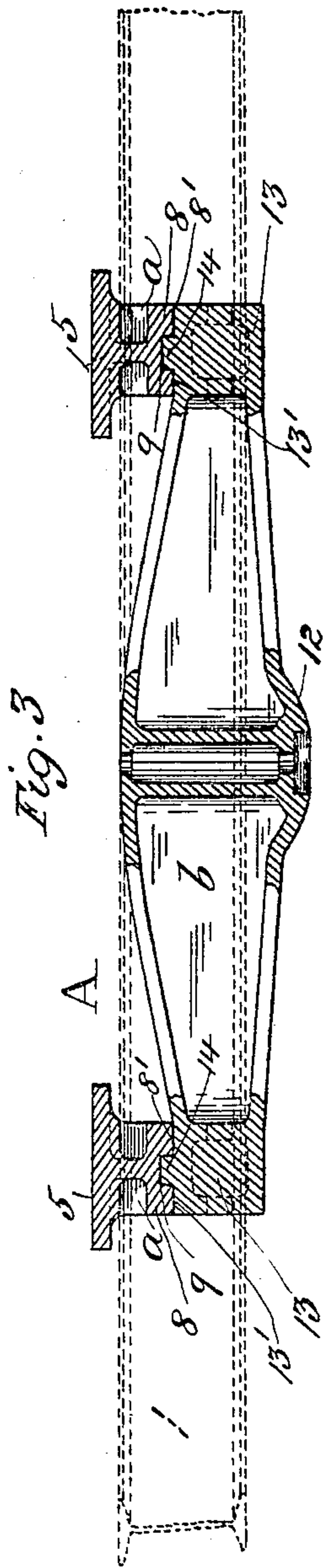
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CAR BOLSTER.

APPLICATION FILED MAY 1, 1905.

5 SHEETS—SHEET 2.



WITNESSES

J. M. Burbow.  
W. M. Pflager.

INVENTOR

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No. 795,282.

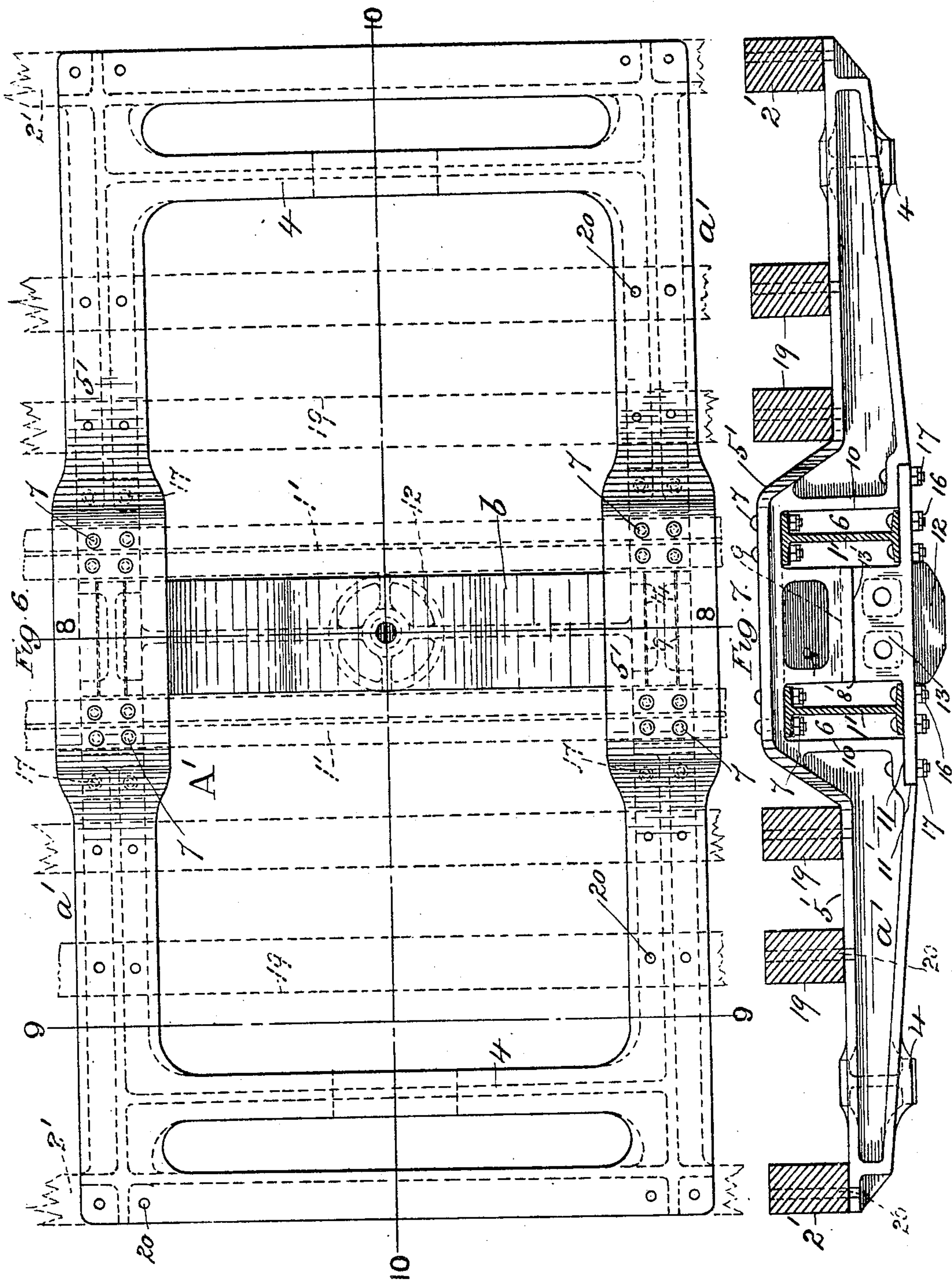
PATENTED JULY 25, 1905.

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APPLICATION FILED MAY 1, 1905.

5 SHEETS—SHEET 3.



WITNESSES

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APPLICATION FILED MAY 1, 1905.

5 SHEETS—SHEET 4.

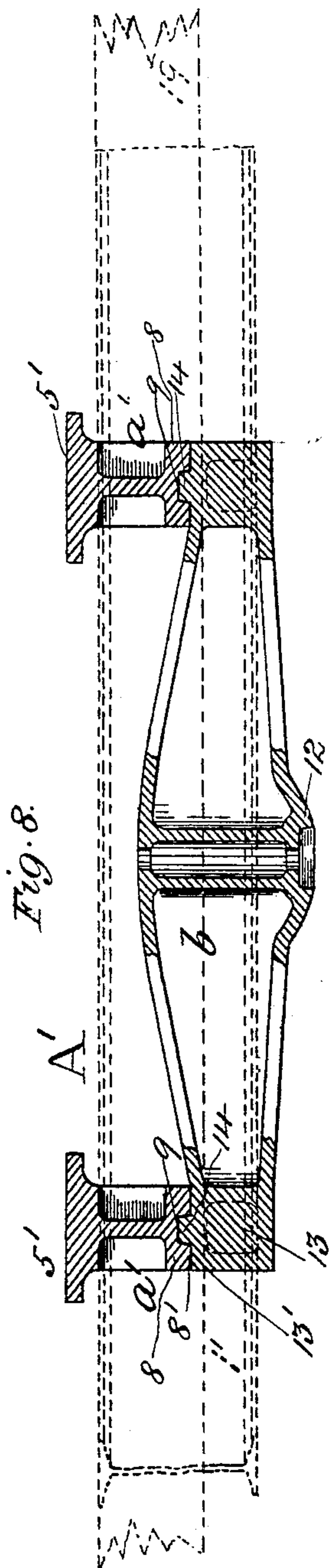


Fig. 8.

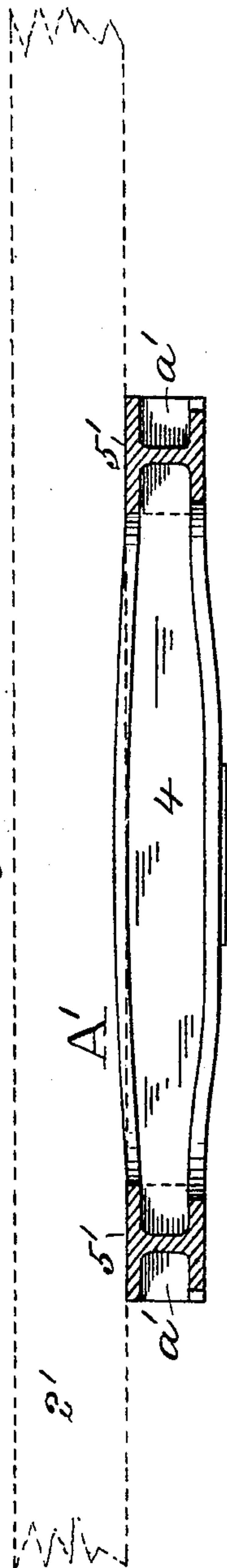
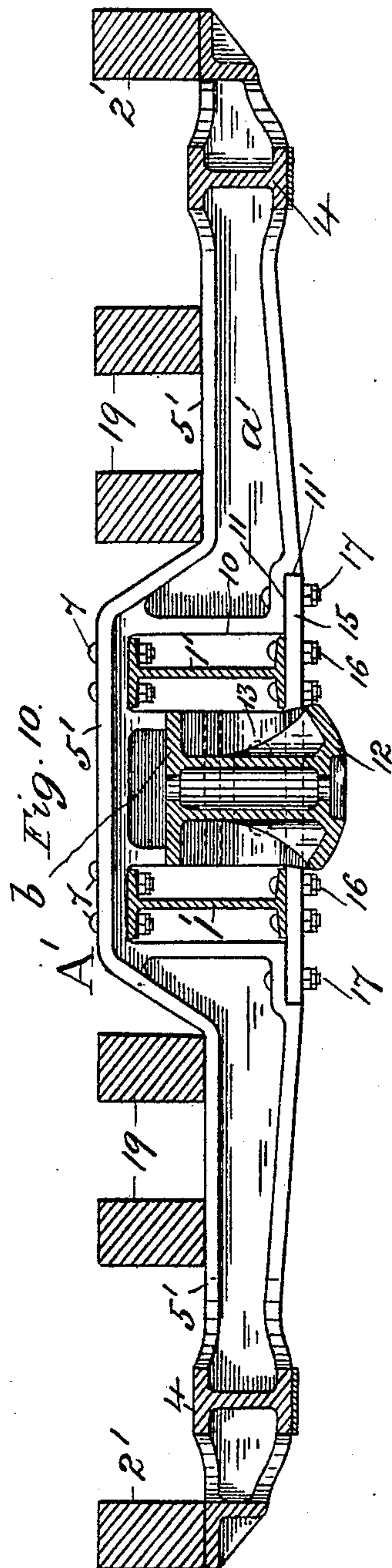


Fig. 9.



WITNESSES

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INVENTOR

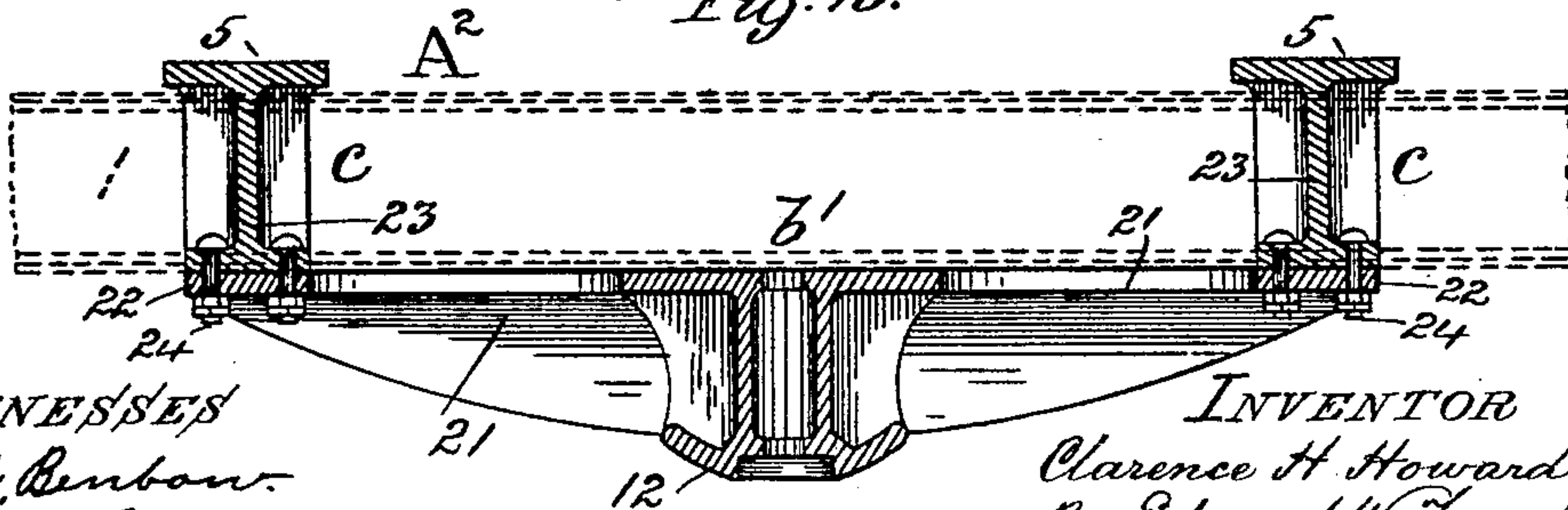
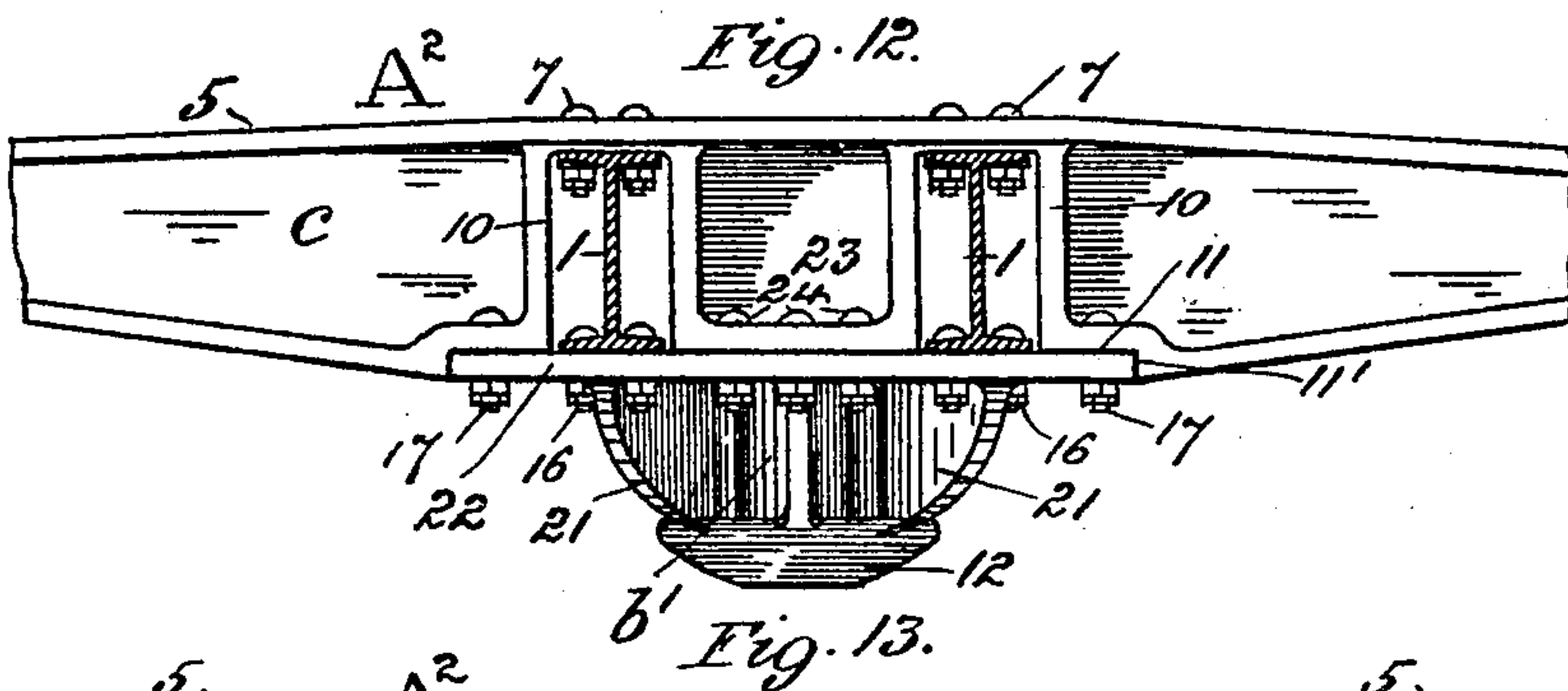
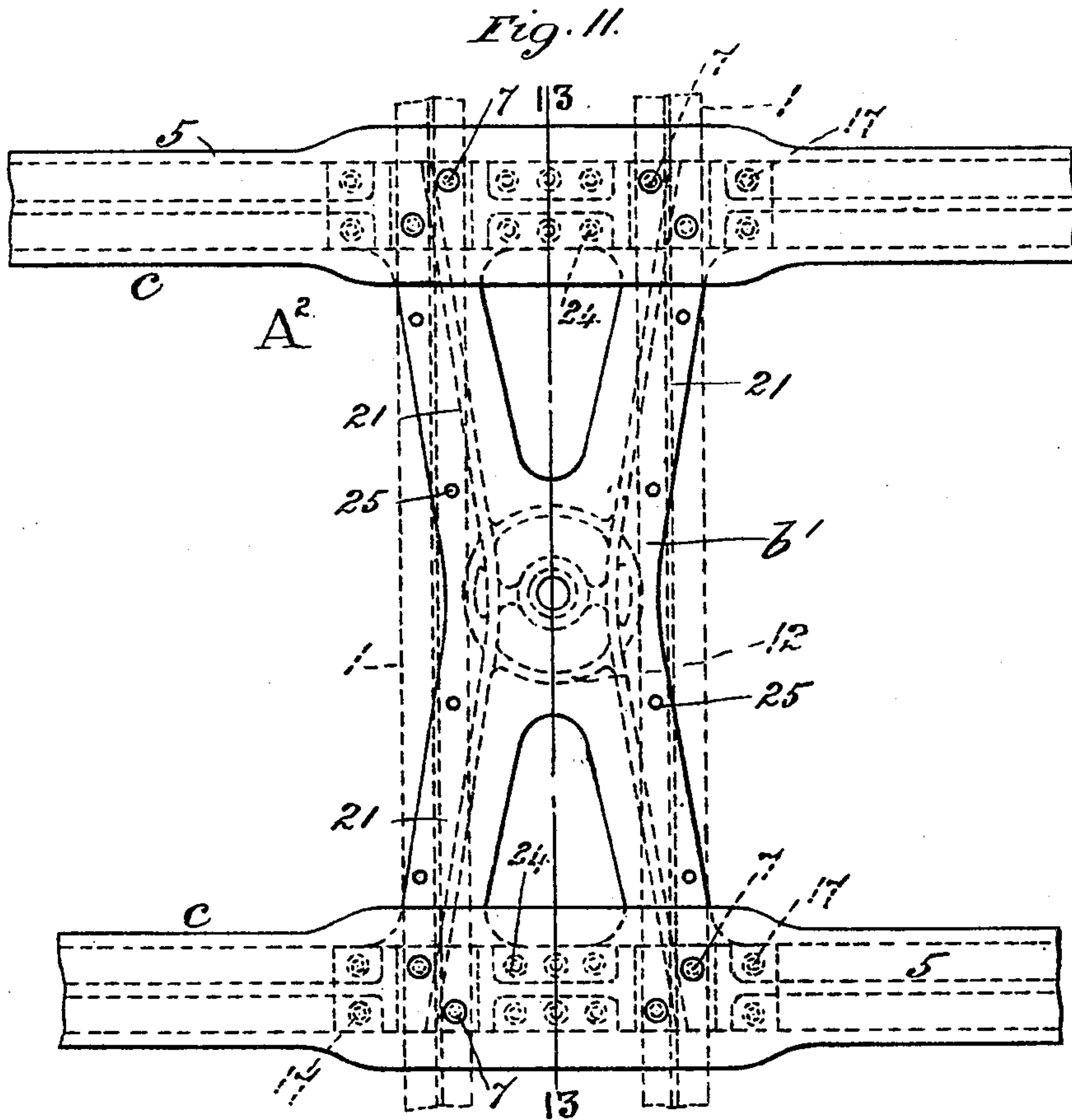
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APPLICATION FILED MAY 1, 1905.

5 SHEETS—SHEET 5.



WITNESSES  
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INVENTOR  
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By Edward W. Furrell  
His Atty



# UNITED STATES PATENT OFFICE.

CLARENCE H. HOWARD, OF ST. LOUIS, MISSOURI.

## CAR-BOLSTER.

No. 795,282.

Specification of Letters Patent.

Patented July 25, 1905.

Application filed May 1, 1905. Serial No. 258,286.

*To all whom it may concern:*

Be it known that I, CLARENCE H. HOWARD, a citizen of the United States, residing at St. Louis, in the State of Missouri, have invented a new and useful Improvement in Car-Bolsters, of which the following is a specification.

My invention relates particularly to the double body-bolsters of a railroad-car having the longitudinal middle and side sills of its under frame of commercial-shaped rolled steel or of steel and wood, respectively, as the case may be, and has for its object to provide a strong and durable bolster so arranged as to form a rigid lateral bracing to the sills and in which the middle cross-beam having the body center plate is separably fixed to the two opposite side beams which are secured to the car-frame transversely thereto and adapted to straddle the middle sills, so that the latter (or the side sills when of steel) if damaged can be lowered and removed from the car-body without disconnecting the side beams of the bolster.

The invention consists in features of novelty as hereinafter described and claimed, reference being had to the accompanying drawings, forming part of this specification, whereon—

Figure 1 is a top plan of my improved double body-bolster as applied to a car-frame having its longitudinal middle and side sills of rolled steel; Fig. 2, a side elevation thereof; Figs. 3 and 4, cross-sections through the bolster longitudinally to the car on lines 3 3 and 4 4, respectively, in Fig. 1; Fig. 5, a vertical longitudinal section through the bolster transversely to the car on line 5 5 in Fig. 1; Figs. 6, 7, 8, 9, and 10, views corresponding respectively to Figs. 1, 2, 3, 4, and 5 of the bolster as applied to a car-frame having the middle sills of steel and the side and intermediate sills of wood; and Figs. 11, 12, and 13, views corresponding to Figs. 1, 2, and 3, respectively, showing a modification of the bolster.

Like letters and numerals of reference denote like parts in all the figures.

Referring to Figs. 1, 2, 3, 4, and 5, A represents my improved double body-bolster, which consists of two opposite side beams *a*, preferably I-shaped in cross-section, of cast-steel integral throughout respectively, and arranged parallel to each other at a suitable distance apart transversely to and preferably in the plane of the longitudinal middle and side steel sills 1 and 2 for their entire depth or thereabout. The side beams *a* are fixed at

their ends, preferably to the inner faces, respectively, of the side sills 2, by rivets 3 and are connected to each other adjacent to each side sill 2 by a cross-piece 4, which is adapted to form the side bearing of the bolster A and is preferably integral with and forms a brace to the side beams *a* thereat, or the cross-piece 4 may be of separate construction and secured to the side beams *a* by bolts or rivets. Transversely through each side beam *a* at a suitable depth from its top side or flange 5 and at a distance from the middle of the beam *a* (or longitudinal center line of the car-frame) corresponding to the intersection therewith of the middle sills 1 are formed two upright slotways 6, which straddle the sills 1 transversely thereto, the upper closed ends of the slotways 6 when the side beam *a* is in place bearing upon the top sides of the sills 1 and preferably fixed thereto by bolts 7, (or rivets,) the middle portion 8 of the side beam *a* between the slotways 6 extending downward part way of the full depth of the beam *a* and having its under side 8' adapted to form a bearing-surface, in which is a recess 9, as hereinafter more particularly referred to, while the outer walls 10 of the slotways 6 extend the entire depth or thereabout of the beam *a* and middle sills 1, the bottom flange of the beam *a* adjacent to each wall 10 being recessed to form a bearing 11, having a shoulder 11' at its outer end, as shown.

*b* is the middle cross-beam of the bolster A, which is formed or provided on its under side with the body center plate 12 and connects the side beams *a* together. The cross-beam *b*, which is preferably I-shaped in cross-section, of cast-steel integral throughout, but may be otherwise configured, as found most suitable, is arranged longitudinally to the car-frame between the middle sills 1, each end portion 13 of the beam *b* extending beneath the middle dependent portion 8 of the corresponding side beam *a* and having its top side 13' adapted to bear against the bottom surface 8' of the side beam *a*. On the bearing-surface 13' is formed a projection 14, which when the surfaces 8' 13' are in contact engages with the recess 9, and thereby locks the beams *a* and *b* together horizontally.

From the sides of each end portion 13 of the beam *b*, at or near the bottom, project horizontal flanges 15, (one on each side,) which in the assembled position of the beams *a* and *b* extend across the lower open ends of the slotways 6 and bear against the under side of the



sills 1, to which they are removably fixed by bolts 16, (or rivets,) the outer portions of the flanges 15 underlapping the bearings 11 in the bottom of the side beam *a* and butting at the ends against the shoulders 11', the flanges 15 being fixed to the side beams *a* by bolts 17, (or rivets,) whereby the beams *a* and *b* and the sills 1 are firmly secured to each other, the bolsters A acting as lateral braces to the sills 1 and 2 and forming therewith a rigid and durable support to the car-body designed and operating to resist abnormal longitudinal and transverse strains resulting from collision or otherwise.

18 represents the lugs for the truss-rods, which are preferably integral with one of the side beams *a*.

By the above construction of the bolster A the cross-beam *b* can be separated from the side beams *a* by removing the bolts 16 and 17, when by disconnecting the nuts of the bolts 7, which secure the sills 1 to the top flanges 5 of the side beams *a*, the sills 1, if damaged, can be lowered through the slot-ways 6 and removed from the car-body and renewed without disturbing the side beams *a*, whereby a great saving of time and labor is effected in case of emergency.

In the application of my improved double body-bolster A' to a car-frame, having its middle longitudinal sills 1' of steel and the side and intermediate sills 2' 19, respectively, of wood, as shown in Figs. 6, 7, 8, 9, and 10, the top flanges 5' of the side beams *a'* are configured so as to pass over the middle steel sills 1, to which they are fixed by the bolts 7, (or rivets,) as in Figs. 1 to 6, and thence under the sills 2' 19, to which they are fixed by bolts, (not shown,) which pass through the holes 20 in the top flanges 5' and through the sills 2' 19, as indicated by broken lines in Fig. 7, in the same manner as with ordinary cast-steel or analogous bolsters, the other parts of the bolster A' being similar in construction and function to the corresponding parts of the bolster A described and shown by Figs. 1, 2, 3, 4, and 5, and therefore needing no recapitulation.

In the modification of my improved bolster A<sup>2</sup> (seen in Figs. 11, 12, and 13) the cross-beam *b'* is bifurcated from its central portion toward each end, the bifurcated portions 21, which bear against the under sides of the middle steel sills 1, being preferably T-shaped in cross-section and united at each end and adjacent thereto by an upper plate 22, which bears at the top against the under side of the middle portion 23 of the side beam *c* and is removably fixed thereto by bolts 24, (or rivets,) the extended portions of the plate 22 bearing against the under sides of the middle sills 1 and bearings 11 of the side beams *c* and removably fixed thereto respectively by bolts 16' 17' in the same manner as the flanges 15 in Figs. 1, 2, and 3. Furthermore, holes 25

are formed through the bifurcated portions 21 of the cross-beam *b'*, whereby the latter may be removably fixed thereat to the middle sills 1 by bolts, (not shown,) the bolster A<sup>2</sup> in other respects being practically similar in principle and function to the bolster A described in Figs. 1, 2, 3, 4, and 5.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. A car-body bolster of the class described, consisting of two opposite side beams respectively integral and fixed to the longitudinal car-sills transversely thereto, a cross-beam intermediate to the side beams and having the body center plate integral therewith, the end portions of the cross-beam extending beneath, and adapted to bear against the under sides of the middle portions of the side beams, and means for separably fixing the cross-beam to the side beams, substantially as described.

2. A car-body bolster of the class described, consisting of two opposite side beams respectively integral and fixed to the longitudinal car-sills transversely thereto, a cross-beam intermediate to the side beams and having the body center plate integral therewith, the end portions of the cross-beam extending beneath and adapted to bear against the under sides of the middle portions of the side beams, a recess in the bearing-surface of each of the said portions, and a projection on the corresponding surface of the cross-beam, adapted to engage in the said recess for locking the said beams together horizontally, and means for separably fixing the cross-beam to the side beams and middle longitudinal sills, substantially as described.

3. A car-body bolster of the class described, consisting of two opposite side beams respectively integral and fixed to the longitudinal car-sills transversely thereto, a cross-piece intermediate to and integral with the side beams, and adapted to form the side bearing of the bolster, a cross-beam intermediate to the side beams and having the body center plate, the end portions of the cross-beam extending beneath and adapted to bear against the under sides of the middle portions of the side beams, a recess in the bearing-surface of each of the said end portions, and a projection on the corresponding surface of the cross-beam, adapted to engage in the said recess for locking the beams together horizontally, and means for separably fixing the cross-beam to the side beams and middle longitudinal sills, substantially as described.

4. A car-body bolster of the class described, consisting of two opposite side beams respectively integral and fixed to the longitudinal car-sills transversely thereto, a cross-beam intermediate to the side beams and having the body center plate, the end portions of the cross-beam extending beneath and adapted to bear against the under sides of the middle portions of the side beams, a recess in the bearing-sur-



face of each of the said portions and a projection on the corresponding surface of the cross-beam, adapted to engage in the said recess, flanges projecting laterally from the cross-beam and bearing against the under sides of the middle longitudinal sills, and means for separably fixing the said flanges to the side beams and middle sills, substantially as described.

5. In a car-body bolster of the class described, the combination with a car-frame having metallic longitudinal middle and side sills, of two opposite side beams arranged transversely to the said sills and bearing at their ends against the inner faces of the side longitudinal sills, slotways formed transversely through the side beams and straddling the middle longitudinal sills, a cross-beam intermediate to the side beams and having the body center plate, the end portions of the cross-beam extending beneath and adapted to bear against the under sides of the middle portions of the side beams, and against the under sides of the middle sills, means for separably fixing the cross-beam to the side beams, and for fixing the side beams to the middle and side sills, substantially as described.

6. In a car-body bolster of the class described, the combination with a car-frame having metallic longitudinal middle and side sills, of two opposite side beams arranged transversely to the said sills and bearing at their ends against the inner faces of the side sills, slotways formed transversely through the side beams and straddling the middle sills, a cross-beam intermediate to the side beams and having the body center plate, the end portions of the cross-beam extending beneath and adapted

to bear against the under sides of the middle portions of the side beams and against the under sides of the middle sills, a recess in the bearing-surface of each of the said portions, and a projection on the corresponding surface of the cross-beam, adapted to engage in the said recess, means for separably fixing the cross-beam to the side beams and middle sills, and for fixing the side beams to the middle and side sills, substantially as described.

7. In a car-body bolster of the class described, the combination with a car-frame having metallic longitudinal middle sills, of two opposite side beams arranged transversely to the said sills and bearing against the under sides of the side and intermediate longitudinal sills, slotways formed transversely through the side beams and straddling the middle sills, a cross-beam intermediate to the side beams and having the body center plate, the end portions of the cross-beam extending beneath and adapted to bear against the under sides of the middle portions of the side beams, and against the under sides of the middle sills, a recess in the bearing-surface of each of the said portions and a projection on the corresponding surface of the cross-beam adapted to engage in the said recess, means for separably fixing the cross-beam to the side beams and middle sills, and for fixing the side beams to all the said sills, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CLARENCE H. HOWARD.

Witnesses:

H. M. PFLOGER,

EDWARD W. FURRELL.