

No. 680,512.

Patented Aug. 13, 1901.

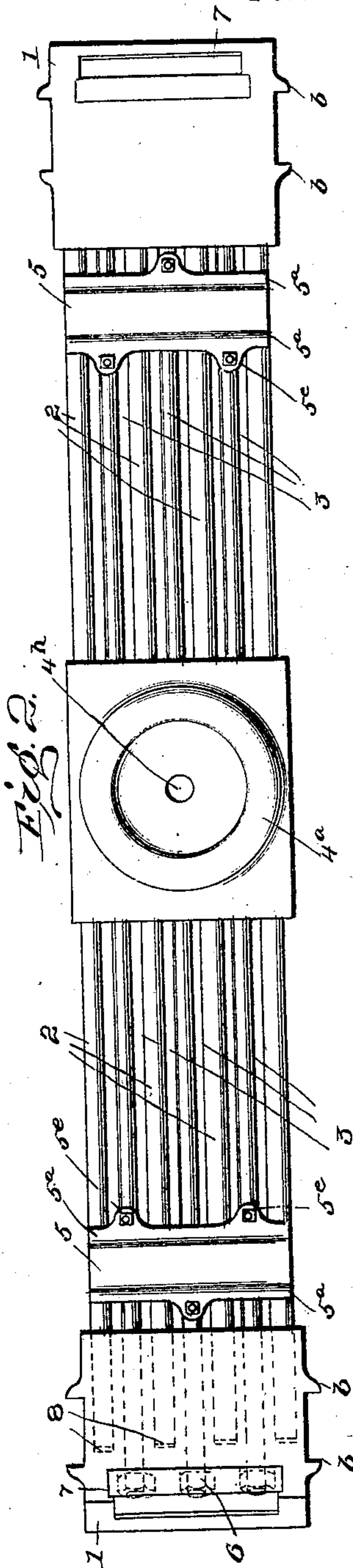
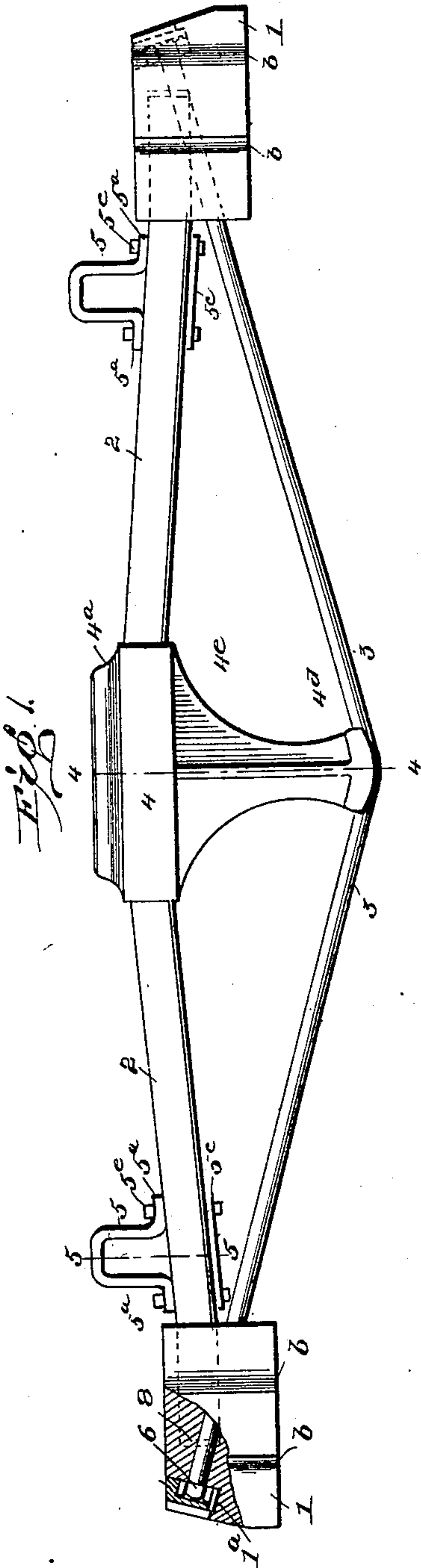
C. H. WILLIAMS, JR. & G. P. RITTER.

CAR BOLSTER.

(Application filed June 17, 1901.)

2 Sheets—Sheet 1.

(No Model.)



Witnesses:

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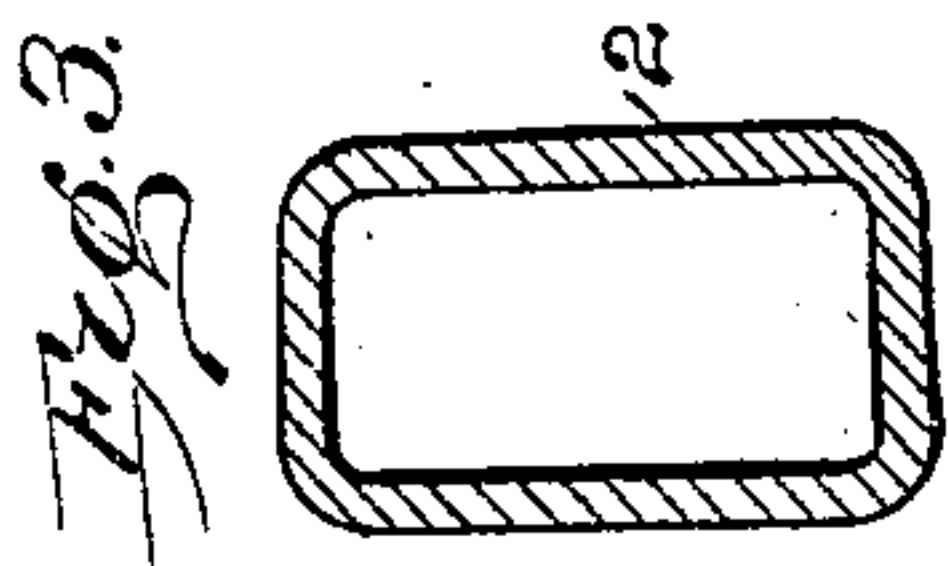
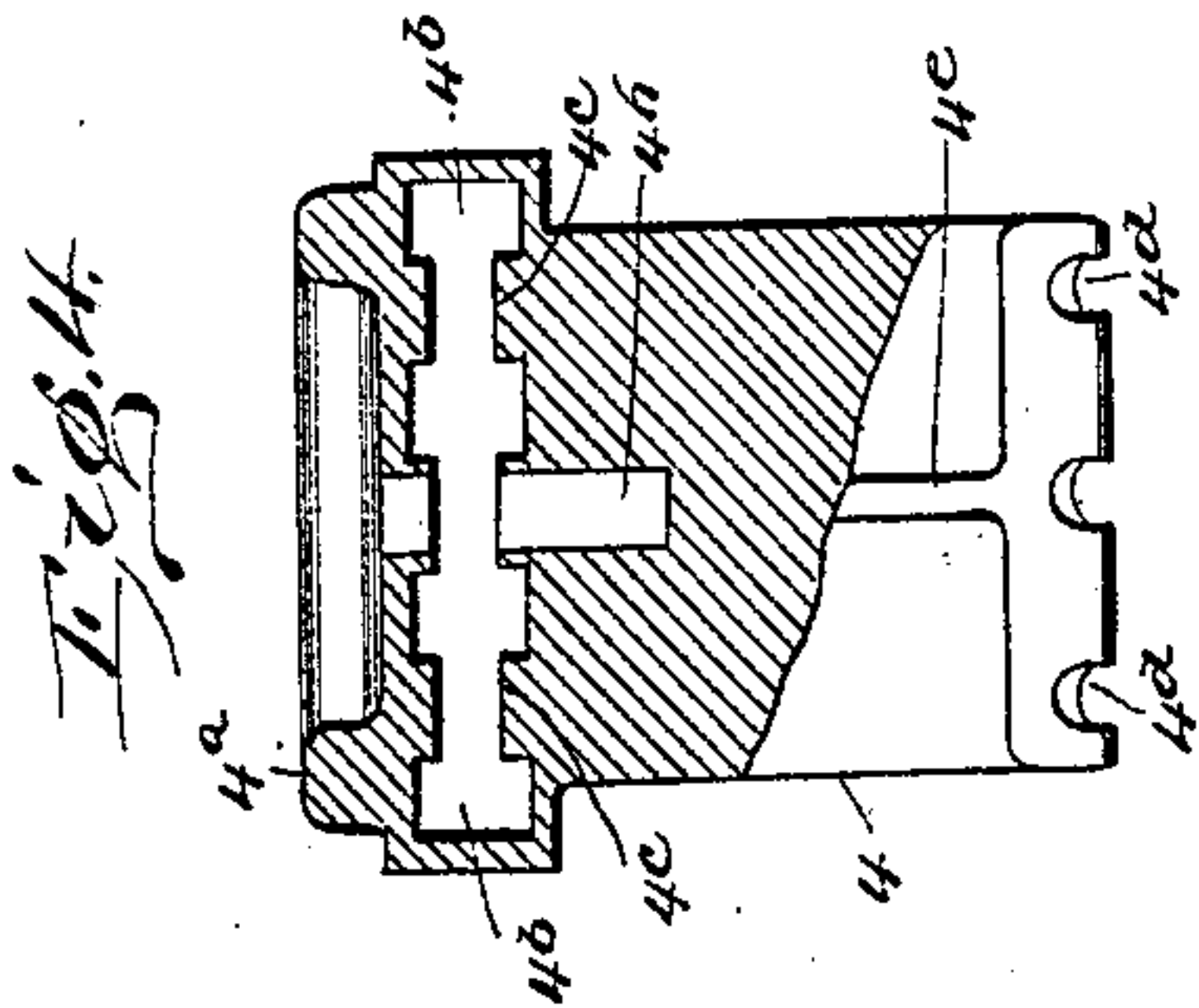
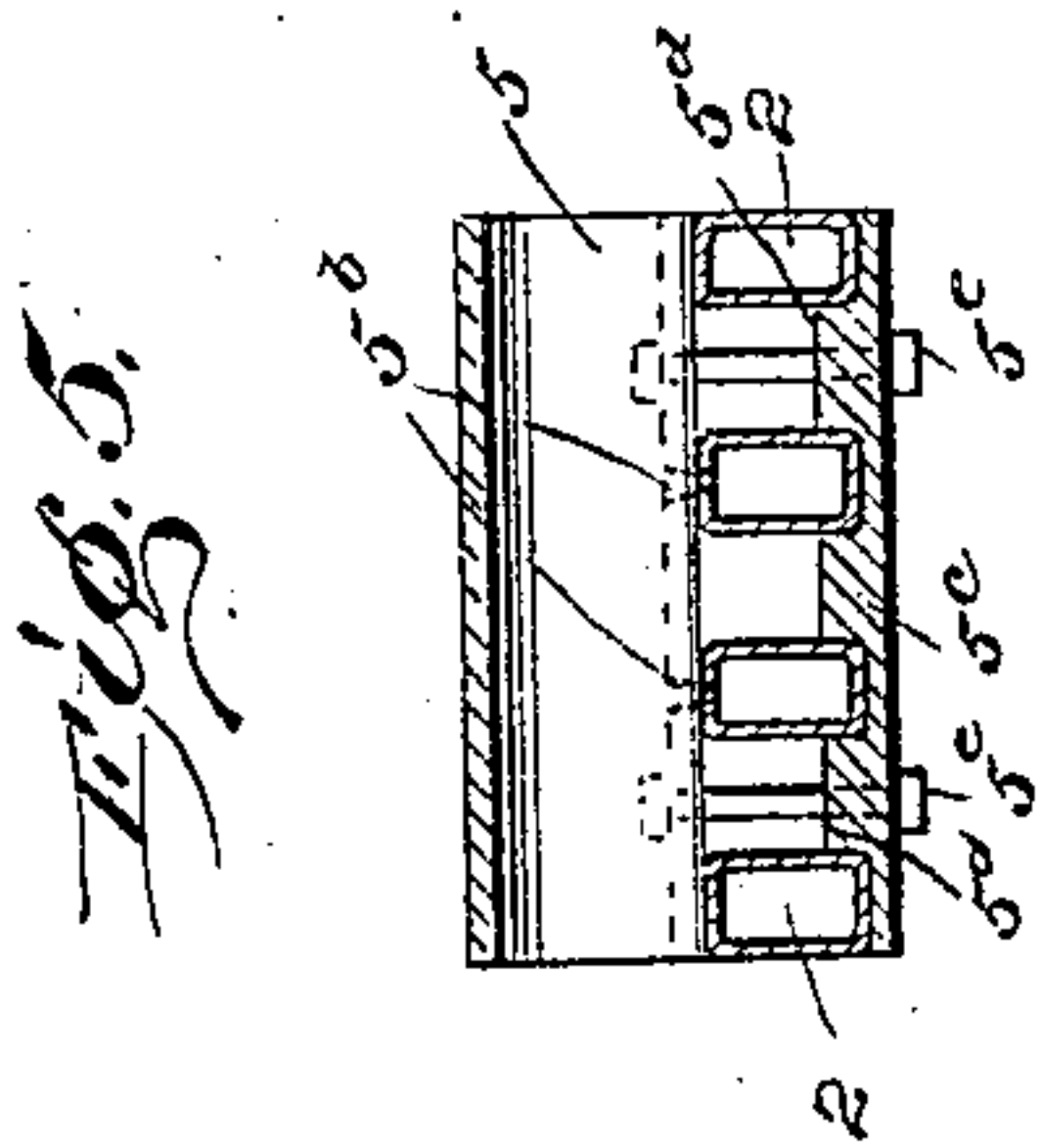
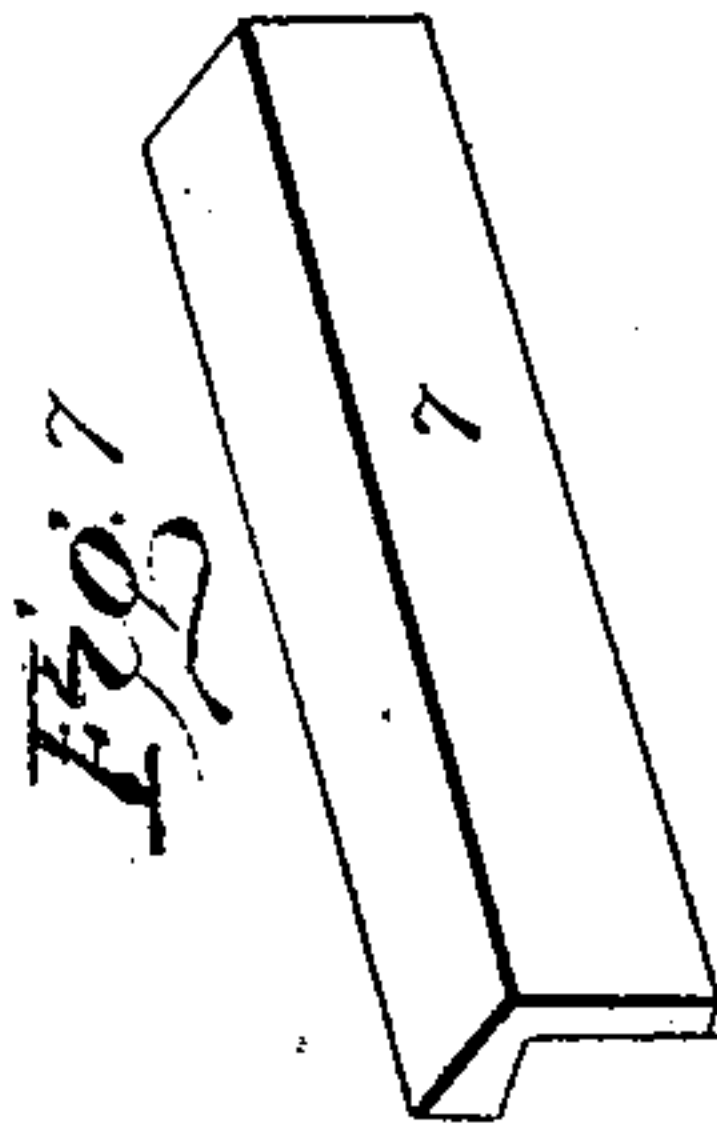
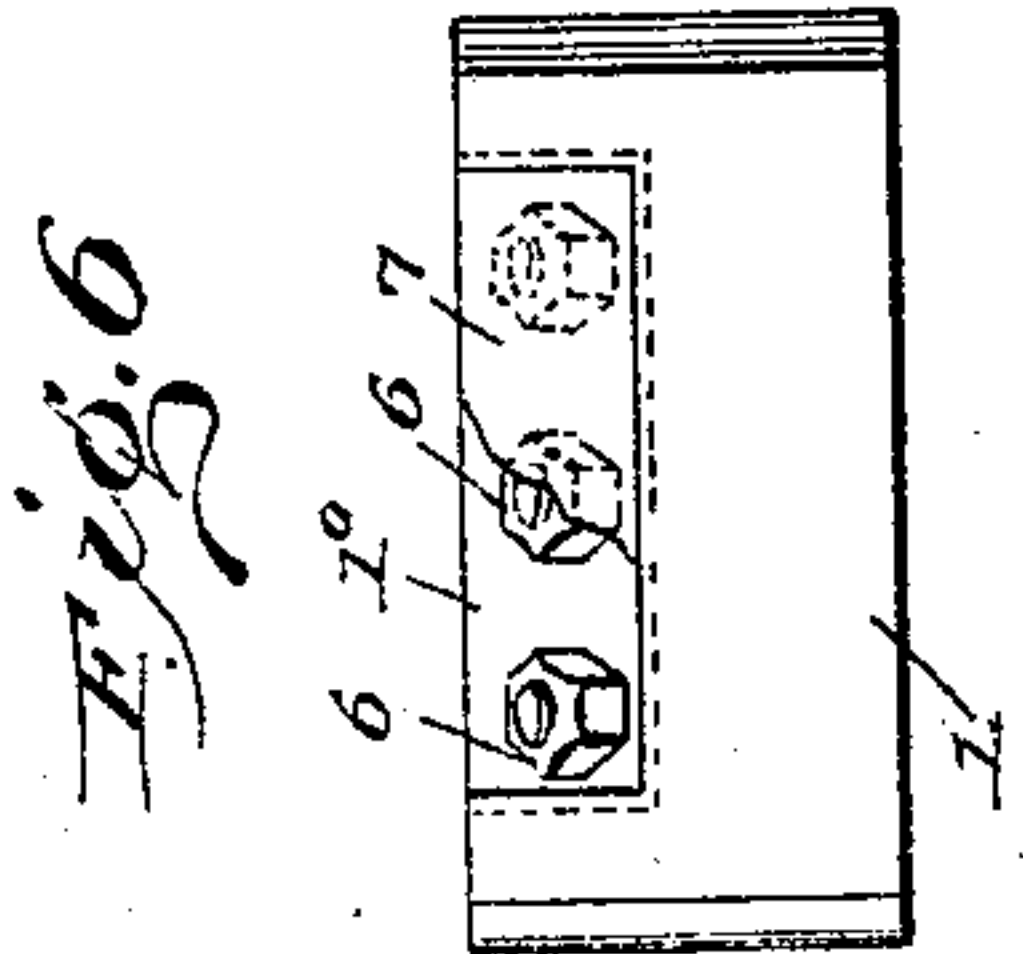
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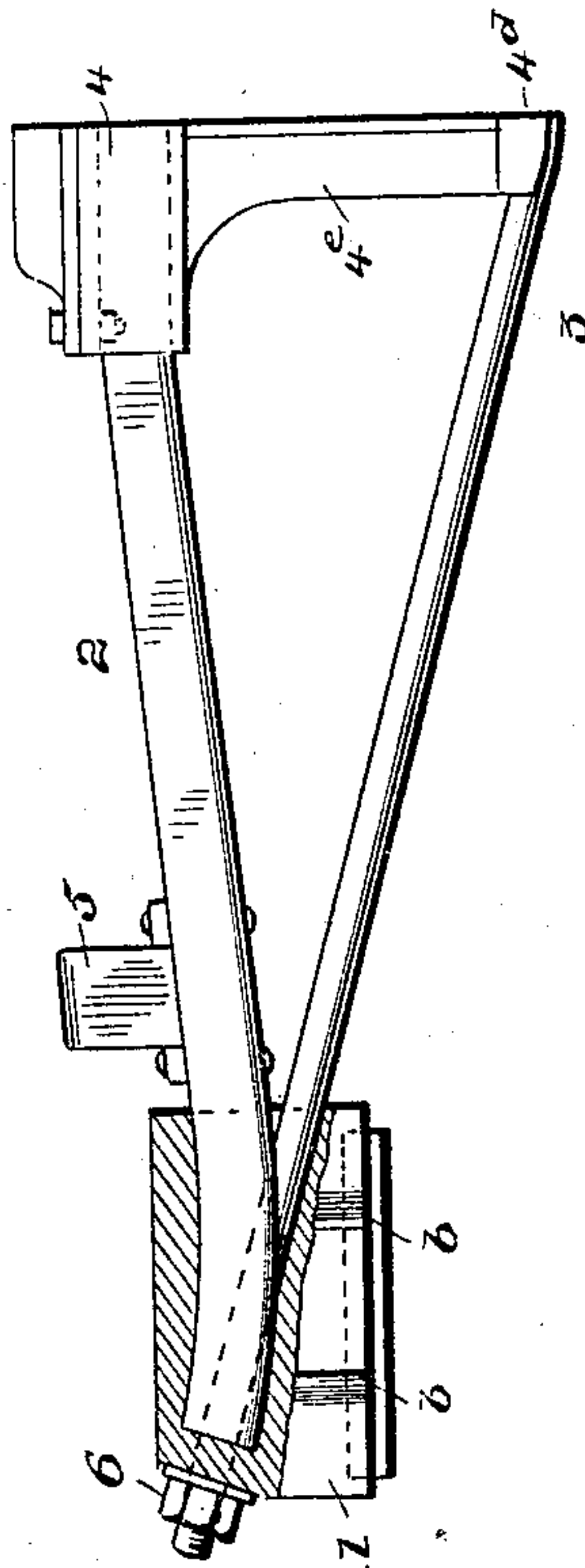
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(No Model.)

2 Sheets—Sheet 2.



*Fig. 8*



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# UNITED STATES PATENT OFFICE.

CHARLES H. WILLIAMS, JR., AND GILBERT P. RITTER, OF CHICAGO, ILLINOIS;  
SAID WILLIAMS ASSIGNOR TO SAID RITTER.

## CAR-BOLSTER.

SPECIFICATION forming part of Letters Patent No. 680,512, dated August 13, 1901.

Application filed June 17, 1901. Serial No. 64,873. (No model.)

*To all whom it may concern:*

Be it known that we, CHARLES H. WILLIAMS, Jr., and GILBERT P. RITTER, citizens of the United States, and residents of Chicago, in the county of Cook, State of Illinois, have invented certain new and useful Improvements in Car-Bolsters; and we hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation of a car-bolster embodying our invention, one end partly broken away to show the end plate which conceals the nuts. Fig. 2 is a top plan view of the bolster shown in Fig. 1, the dotted lines showing the relation of the tension and compression members in the end cap. Fig. 3 is an enlarged cross-section of the preferred form of tubular compression member employed in the construction of the bolster. Fig. 4 is a partial vertical transverse section of the center plate and strut, taken on the line 4 4, Fig. 1. Fig. 5 is a vertical section of the side bearing, the compression members, and the clamp-plate of the side bearing, taken on the line 5 5, Fig. 1. Fig. 6 is a detached view of the end cap, the end plate being partly broken away to show the nut-channel of the end cap. Fig. 7 is an enlarged perspective view of the end plate or key. Fig. 8 is a side elevation of one end of a bolster embodying our invention, the end cap being in partial section to show a modification in the socket of the cap to bring the center line of the tension member in line with the center line of the tubular compression member.

Like symbols refer to like parts wherever they occur.

Our invention relates to the construction of composite metallic bolsters for railway-cars, and has for its object the production of a composite metallic bolster wherein the tension and compression members are so relatively arranged as to avoid slotting or weakening of the members and to obtain the maximum strength or carrying capacity with the minimum of metal.

To this end the main feature of our invention consists in the combination, in a trussed bolster, of a plurality of independent tubular

compression members with a plurality of tension members, the axes of the compression and tension members arranged in different vertical planes, preferably alternating, whereby the structure may be assembled and combined without impairing the structure of the compression members and without weakening the same.

A secondary feature of our invention resides in the combination, in a trussed bolster, of a plurality of independent spaced compression members and a plurality of tension members, the tension members and the compression members being unequal in numbers and the tension members alternating with the compression member, whereby a stiff and symmetrical bolster is secured.

A further feature of our invention is embodied in the combination, with a trussed bolster having tubular compression members, of a clamp side bearing, whereby the said side bearing may be adjusted upon and secured to the bolster without weakening the tubular compression members thereof.

There are other minor features of invention, all as will hereinafter more fully appear.

For the purposes of this specification the bolster chosen as illustrating our invention is what is termed a "truck-bolster," and therefore the end caps and spring-blocks 1 1 are shown as provided with lugs *b b* for the truck-columns, and such features (which are common and form no part of the present invention) may be omitted from the body-bolster, which otherwise, so far as the present invention is concerned, is a truck-bolster inverted. In the illustration we have also shown the tubular compression members as substantially parallelograms in cross-section, because such a section gives greater stiffness and strength, its depth being in the line of the load and truss; but it will be evident that tubes of cylindrical or oval cross-section may be used, if desired, without departing from the spirit of our invention.

We will now proceed to describe our invention more fully, so that others skilled in the art to which it appertains may apply the same.

In the drawings the bolster, which is a trussed structure, is shown as comprised of a plurality of independent tubular compression



members 2 2 and a plurality of tension members 3 3 so arranged with relation to each other as to have their axes in different vertical planes when the bolster is in its normal position, provided with an interposed strut 4 and having their ends united by the end caps 1 1, the ends of the compression members of the structure being also cross-braced by the side bearings 5 5.

10 The compression members 2 2 of the structure are preferably constructed of flattened tubing—that is to say, are in the form of a parallelogram in cross-section—as increased stiffness is thereby obtained for a given weight of metal, and the compression members 2 2 exceed in number the tension members 3 3 and are alternately arranged, as indicated in the drawings, though the compression and tension members may be equal in number, if desired, and differently assembled, provided the compression members and tension members are arranged in different planes, so as to enter the end caps without intersecting.

25 4 indicates the strut, which may have the center plate 4<sup>a</sup> integral therewith, the whole being a single casting of steel or of cast-iron with the center plate 4<sup>a</sup> chilled, said strut being formed with a channel 4<sup>b</sup> for the passage of the compression members 2 2, lugs 4<sup>c</sup> for separating the compression members, and with grooves 4<sup>d</sup> substantially in line with the lugs 4<sup>c</sup> to insure that the compression members 2 2 and the tension members 3 3 shall occupy different planes when the parts are assembled. It will be noted that the strut 4 is strengthened without materially adding to its weight by means of the webs or ribs 4<sup>e</sup> and that the hole 4<sup>h</sup> for the king-pin bolt occupies a central position between the webs and the king-pin bolt passes between the tubular compression members, so that the structure retains its strength and stiffness. If preferred, the center plate may be detachable from and bolted to the strut, as indicated in Fig. 8 of the drawings.

1 1 indicate end caps and spring-blocks, which receive the ends of the compression members 2 2, each end piece being provided with sockets corresponding in number with the number of compression members 2 2 (see dotted lines left of Fig. 2) and with rod-openings for the passage of the ends of the tension members, the center lines of said rod-openings and sockets being parallel. If desired, the sockets of the end caps may be slightly curved, as indicated in Fig. 8 of the drawings, and a more direct thrust on the compression member be thus obtained.

60 The end caps 1 1 are preferably each provided with a channel 1<sup>a</sup> for the reception and concealment of the nuts 6 upon the ends of the tension members 3, which channel may be dovetailed or provided with a lip to receive and retain an end plate or closure 7, which not only conceals the nuts and gives a solid finish to the end caps, but also effectively

prevents the displacement of the nuts and tends to the preservation of the structure.

8 indicates steel wear-plates, (shown in dotted lines, Figs. 1 and 2,) which may be inserted in the sockets of the end caps to take the wear off the end cap when the same is soft or malleable. The end caps 1 1 may be malleable castings cored for the sake of lightness, and the end plate 7 may also be a malleable angle-plate and may be driven into place like a key after the nuts are adjusted.

5 5 indicate the side bearings, secured to the bolster, and said side bearings may be of any well-known form—as, for instance, a plain cast-iron side bearing, as shown in Fig. 8—but preferably are clamp-secured side bearings, as indicated in Figs. 1, 2, and 5 of the drawings. In this preferred construction the side bearing 5 is provided with base-flanges 5<sup>a</sup> 5<sup>a</sup>, having holes for the passage of bolts or rivets, said holes so located as to avoid the tubular compression members 2 2 when the side bearing is in position on the bolster, and said flanges 5<sup>a</sup> are also provided on their under surfaces with one or more dowel-pins 5<sup>b</sup>, which enter small indentations or perforations in the tubular compression members to prevent the slipping of the side bearing. Beneath the compression members 2 2 is a clamp-plate 5<sup>c</sup>, preferably provided with spacing-lugs 5<sup>d</sup>, and which clamping-plate, in conjunction with the bolts 5<sup>e</sup> 5<sup>e</sup>, which pass between the compression members 2 2, clamp or confine the side bearing to the bolster.

The indentations or slight perforations in the compression members 2 2 for the reception of the dowel-pins 5<sup>b</sup> can be made at any desired point, and as they are comparatively insignificant the side bearing can be readily attached and adjusted without impairing the strength of the bolster. In fact, the cross-bracing effected by the clamp side bearings will enhance the strength of the structure.

The several members of the device being substantially such as hereinbefore pointed out, the parts are assembled by first passing the compression members 2 2 through the channel of the strut 4 and the ends of said members into the sockets provided therefor in the end caps 1 1, next passing the tension members 3 3 over the strut 4 in planes parallel with the planes of the compression members 2 2 and the threaded ends of the tension members through the proper openings in the end caps, after which the nuts 6 are applied and screwed down until the internal strains desired are established and rendered equal throughout the structure. Finally, the end plates 7 are inserted and driven home, which end plates in turn secure the nuts 6 against accidental displacement, thus preserving the desired initial strains within the structure.

Among the advantages incident to our construction and to the particular combinations pointed out herein are, first, great stiffness



and strength in proportion to the weight of the structure; second, the composite structure is, in effect, rendered integral; third, the internal stresses can be equalized and rendered uniform throughout the structure; fourth, all bolsters can be rendered uniform as to dimensions and internal stresses, and, finally, the members of the structure are all commercial pieces, so that no special machinery is required in manufacturing other than the patterns of such portions as are cast.

Having thus described our invention, what we claim, and desire to secure by Letters Patent, is—

1. A trussed metal bolster comprised of a plurality of independent compression and tension members, the tension and compression members having their axes in different vertical planes, and means for connecting said members, substantially as and for the purposes specified.

2. A trussed metal bolster, comprised of a plurality of independent compression and tension members having their axes arranged in alternating planes, and means for connecting said members, substantially as and for the purposes specified.

3. A trussed metal bolster comprised of a plurality of independent compression and tension members, the tension and compression members being unequal in number and arranged alternately, and means for connecting said members, substantially as and for the purposes specified.

4. A trussed metal bolster, comprised of a plurality of independent tubular compression and tension members, a strut, and end caps, said end caps provided with sockets for the

reception of the compression members and passages for the tension members located intermediate of the sockets, substantially as specified.

5. The combination in a trussed metal bolster, of a plurality of compression and tension members, an end cap therefor provided with a channel for the reception of the nuts on the ends of the tension members, and an end plate for closing the nut-channel of the end cap, substantially as and for the purposes specified.

6. The combination with a trussed metal bolster having a plurality of tubular compression members, of a side bearing, and a clamp-plate for confining the side bearing to the compression members of the bolster, substantially as and for the purposes specified.

7. The combination with a trussed metal bolster having a plurality of compression members, of a side bearing provided on its under surface with one or more dowel-pins, and a clamp-plate for confining the side bearing to the compression members of the bolster, substantially as and for the purposes specified.

In testimony whereof we affix our signatures in presence of witnesses.

CHARLES H. WILLIAMS, JR.  
GILBERT P. RITTER.

Witnesses as to signature of C. H. Williams, Jr.:

CHAS. E. CRESS,  
JOHN A. CARROLL.

Witnesses as to signature of G. P. Ritter:

J. M. FOWLER, Jr.,  
D. E. WILSON.