No. 690,825. Patented Jan. 7, 1902.

J. H. BAKER.

BRAKE BEAM.

(Application filed Sept. 12, 1901.)

(No Model.) 2 Sheets—Sheet 1.

FIG. 1.

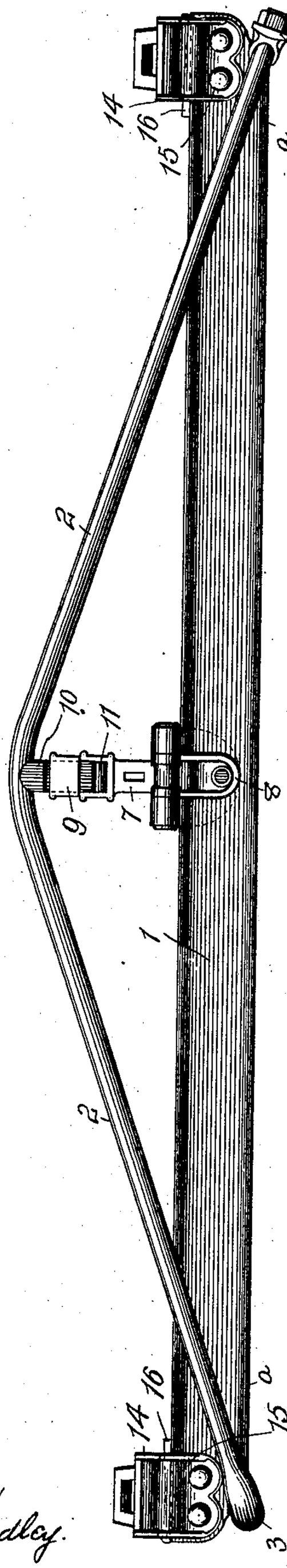

FIG. 2.

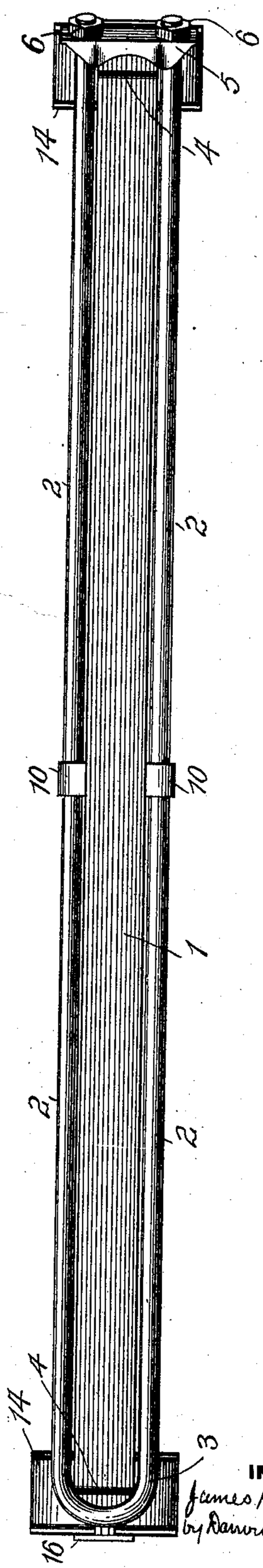

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FIG. 3.

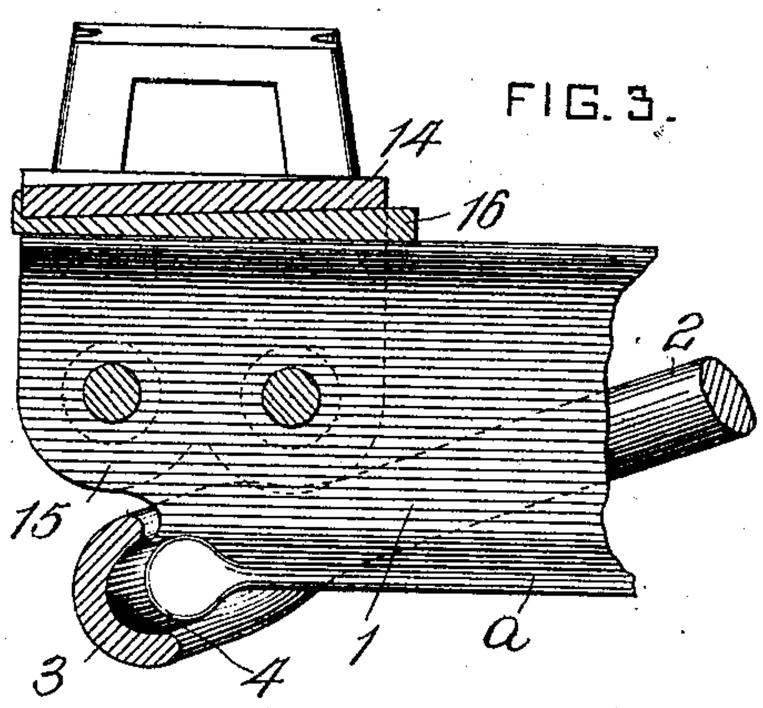


FIG. 4.

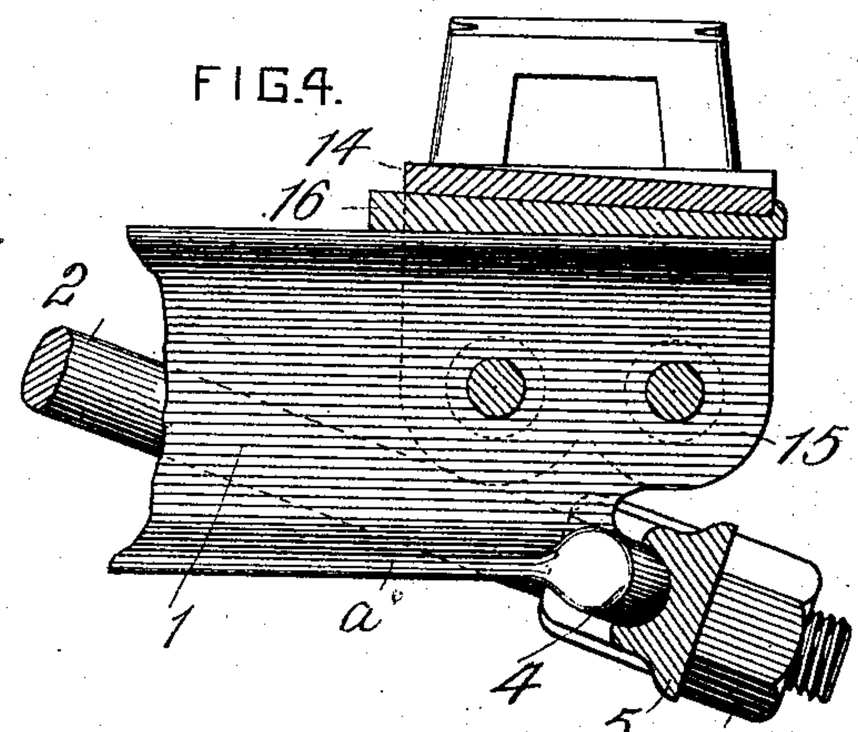


FIG. 5.

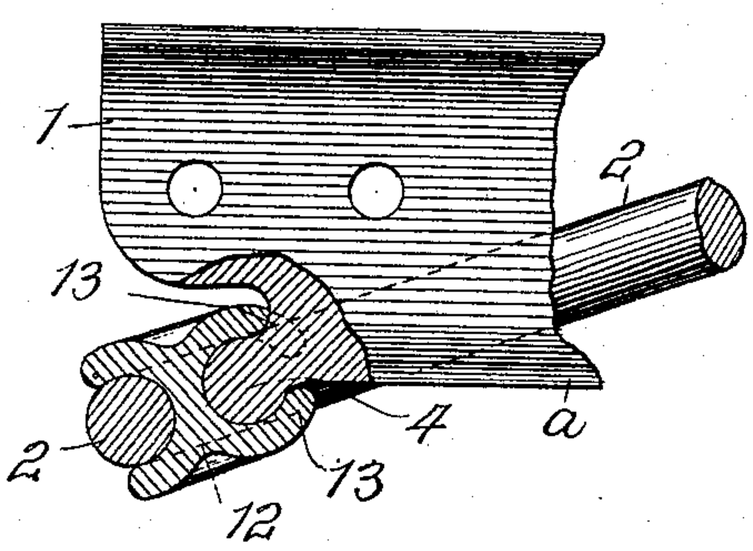


FIG. 6.

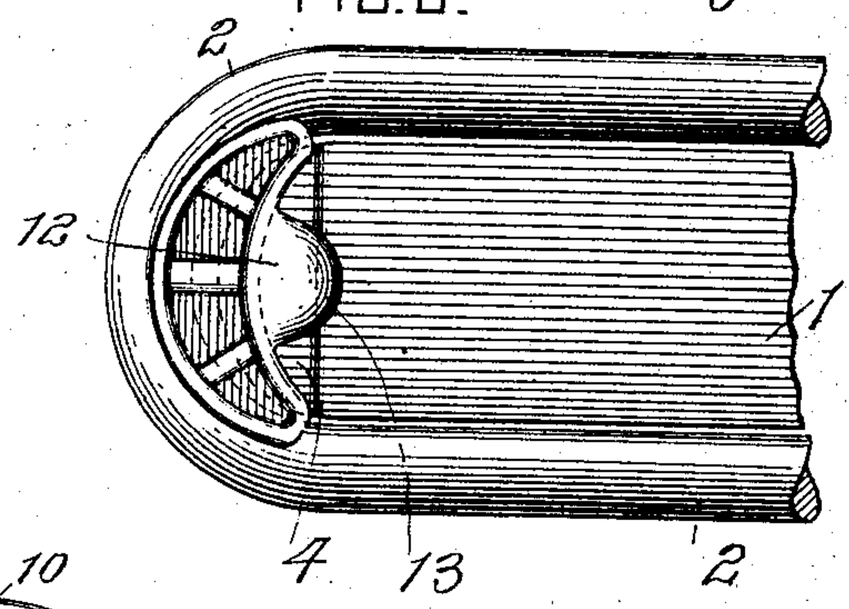
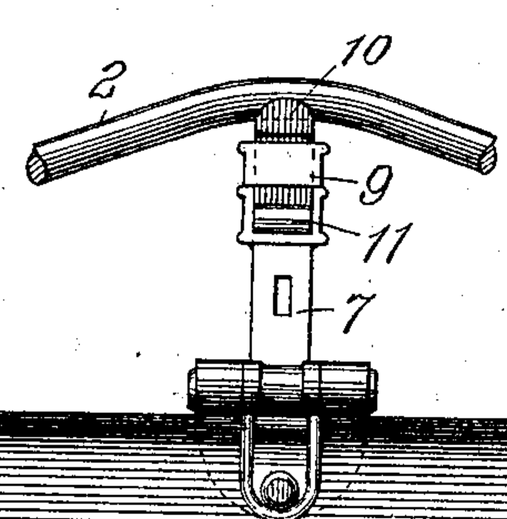


FIG. 7.



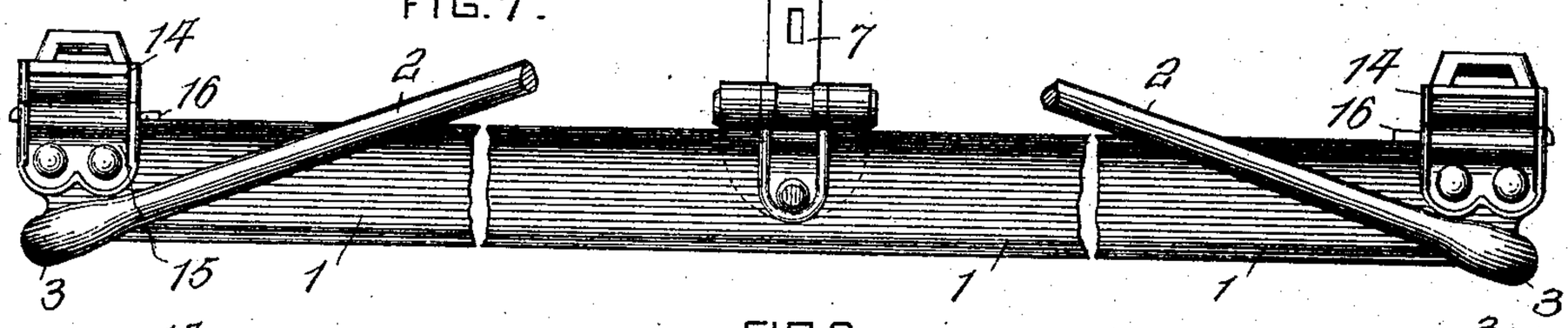


FIG. 8.

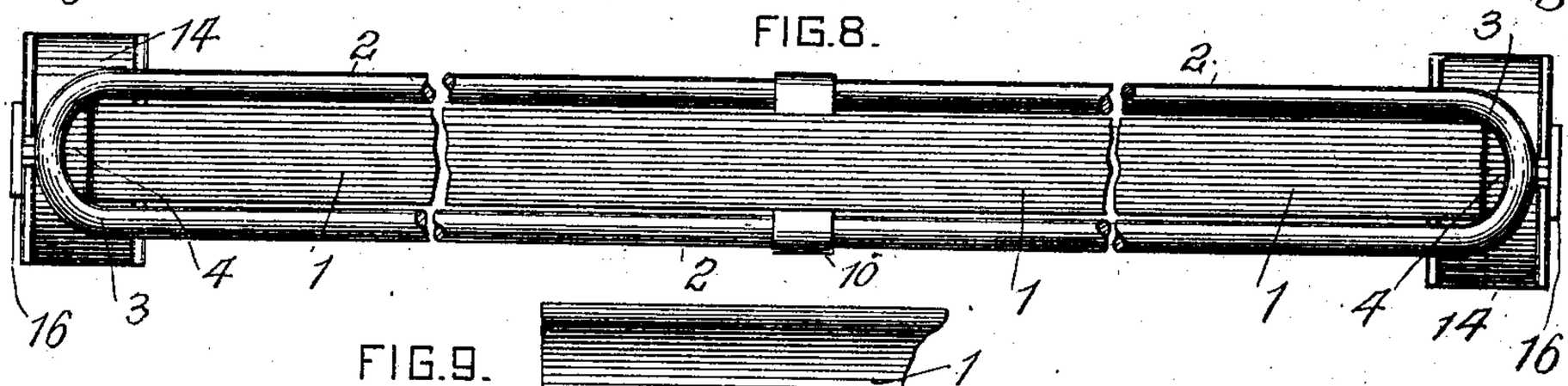
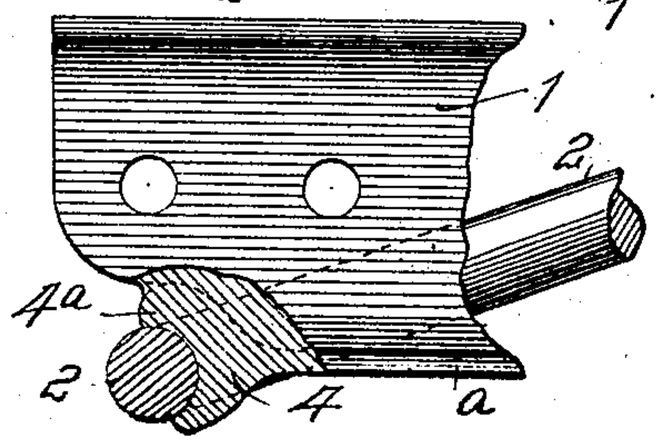


FIG. 9.



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UNITED STATES PATENT OFFICE.

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BRAKE-BEAM.

SPECIFICATION forming part of Letters Patent No. 690,825, dated January 7, 1902.

Application filed September 12, 1901. Serial No. 75,197. (No model.)

To all whom it may concern:

Be it known that I, JAMES H. BAKER, a citizen of the United States, residing at Allegheny, in the county of Allegheny and State of Pennsylvania, have invented or discovered certain new and useful Improvements in Brake-Beams, of which improvements the following is a specification.

The invention described herein relates to certain improvements in the style of brake-beams forming the subject-matter of application Serial No. 72,346, filed by me August 17, 1901. The invention described in said application consists, generally stated, in the employment of a tension member having its end portions, at least, divided, so as to straddle or pass on opposite sides of the compression member, and means whereby the tension or strain on the parts of the tension member might be equalized.

The invention described herein has for its object a construction wherein the strain of the tension member is applied to the compression member without the interposition of the brake-shoe heads or any part thereof, the brake-shoe heads being so connected to the compression member as to permit of their removal without disturbing any other part of the brake-beam.

The invention is hereinafter more fully described and claimed.

In the accompanying drawings, forming a part of this specification, Figure 1 is a plan view of a brake-beam having my improvements applied thereto. Fig. 2 is an edge elevation of the same. Figs. 3 and 4 are sectional elevations, on an enlarged scale, of the two ends of the beam shown in Figs. 1 and 2. Fig. 5 is a sectional detail view illustrating a modification of my improvement. Fig. 6 is an edge elevation of the construction shown in Fig. 5. Figs. 7 and 8 are views similar to Figs. 1 and 2, illustrating a modification in the construction of the beam; and Fig. 9 is a detail view illustrating a modification in the manner of forming the seats or bearings for the tension member at the ends of the compression member.

In the practice of my invention the compression member 1 is formed of a structural shape, such as an I-beam, and the tension member 2 is formed in two parts, preferably by so bending a bar or rod as to form a U shape, the loop 3 at the closed end of the U-shaped tension member being constructed to bear upon a seat 4, formed at the end of the compression member. At the opposite end the legs of the U shape pass through a bar or lever 5, which bears upon the seat 4, formed on the compression member at that end. The seats or bearings 4 at the ends of the compression member are preferably formed by upsetting one of the flanges, as *a*, of the compression member, the web adjacent to the flange being cut back a sufficient distance to permit of this upsetting action and the formation of suitable enlargements or seats. In the construction shown in Figs. 1, 2, 3, 4, 5, and 6 these seats 4 are made circular in the plane parallel with the plane of the flanges of the beam and have their outer or bearing faces convex. When the seats are made convex, as shown, the loop 3 of the tension member is made concave on its inner side, so as to fit the convex surface of the bearing 4, and the bar or lever 5 at the opposite end of the compression member is made with a circular concave seat, so as to fit over the seat 4 at that end of the compression member. It will be readily understood by those skilled in the art that when tightening up the nuts 6 on the ends of the tension member if one nut is drawn more tightly than the other a bar or lever 5 will slip or yield around on its seat, so as to equalize the strain on both parts of the tension member. In case the bar or lever does not slip, the loop portion 3 will slide along its seat or bearing in the direction of the axis of the parts of the tension member and bring about an equalization of strains on the parts of the tension member.

It will be readily understood by those skilled in the art that, if preferred, levers 5 may be employed at both ends of the compression member, in which case the tension member would be formed by two independent bars or rods, and, further, by reference to Figs. 7 and 8 it will be seen that the tension member

may be made in the form of a link or closed at both ends, in which case the inner wall of the loops at the ends of the link would be made concave to receive the seats 4 on the compression member, and proper strain or tension would be applied to the tension member by an adjustable strut of any suitable form or construction—such, for example, as that shown in the drawings. This strut consists of a main portion 7, secured by straps 8 or in any other suitable manner to the compression member and provided with a socket 9 for the reception of a pin 10, which has at its outer end suitable grooves or seats for the two parts of the tension member. The pin 10 is adapted to be forced outwardly from its socket by means of a wedge or other suitable device 11, so as to apply the desired strain or tension to the parts or sections of the tension member.

As the form or shape of seat shown in Figs. 1 to 4, inclusive, requires a special shaping of the closed end of the U-shape or link tension member, I provide a bearing-block 12 to be interposed between the tension member and the seat 4. This bearing consists of a block of metal having in its outer face a groove or concave seat formed on the arc of a circle and on its inner edge a similar groove adapted to fit upon the seat 4. This inner portion is provided with suitable lips 13, which may be bent around the seat 4, so as to hold the bearing-block firmly in position. This construction permits of the use of round rods for tension members—that is, round throughout their entire length. This same purpose or end may be attained by making the seat concave, as clearly shown at 4^a in Fig. 9.

It will be seen from the foregoing that by arranging the points of connection or bearing between the tension and compressiom members at one side of the points of attachment of the brake-shoe heads it affords ample space to connect or secure the brake-shoe heads 14 to the compression member without disturbing the connections between the tension and compression members. These heads are preferably formed with flanges or lips 15, bent so as to fit under the flanges of the compression member and bear against the web portion thereof. These lips are drawn tightly against the web and held in position by suitable rivets.

As it is practically impossible without the expense of a great deal of labor in fitting to cause the brake-shoe heads to fit so closely on the ends of the compression member as to avoid rattling, I provide for tightening the joint or connection between these two parts after the head has been secured in position. To this end a thin wedge 16 is interposed between the compression member and the brake-shoe head before the lips 15 of the latter are secured in position. As soon as the heads are riveted in place the wedge is driven in until a firm tight joint is obtained, whereupon the wedge is locked in position—as, for example, by turning its thin end over against the head or the end of the compression member. In case the heads become loose through wear the wedges can be driven in to compensate for such wear.

It has been found in practice that unless the brake-beam is so hung that its axis is parallel with the axis of the car-wheel axis the beam will be subjected to torsional strains, and in the truss form of brake-beam this strain extends to the tension member and is injurious thereto. Such injurious strains to the tension member are avoided by employing what is, in effect, ball-and-socket bearings between the tension and compression members. In the construction shown in Figs. 1 and 2 if the beam is not hung parallel to the wheel-axle the lower corner of the higher shoe will strike first against the wheel, thereby imparting a twist to the compression member carrying the shoes; but by reason of the curved bearings between the compression and tension members the ends of the compression member will slip on the tension member and have no injurious effect thereon. This torsional connection between the tension and compression members—and by the term "torsional connection" I mean such a connection between the compression and tension members as will permit of a movement of the compression member independent of or without straining the tension member—can be attained in many ways, and hence as regards the broad claims I do not limit myself to specific form or construction—as, for example, in the construction shown in Figs. 1 to 4, inclusive, the ball part of the joint is formed directly on the compression member and the socket portion is formed by the tension member. This construction may be reversed, and, if desired, a bearing-block forming a portion of the torsional connection may be interposed between the tension and compression members, as indicated in Figs. 5 and 6.

I claim herein as my invention—

1. A brake-beam having in combination a compression member, a tension member, a strut and a brake-shoe head, the tension member having portions extending on opposite sides of the compression member and having a bearing on the compression member in the rear of the points of attachment of the brake-shoe head and independent thereof, substantially as set forth.

2. A brake-beam having in combination a compression member having bearing-seats formed thereon, a tension member having portions extending on opposite sides of the compression member to said seats outside of the brake-shoe heads, a strut and a brake-shoe head secured to the compression member independent of the tension member, substantially as set forth.

3. A brake-beam having in combination a compression member, a tension member and a strut, the compression member being provided with seats or bearings for the tension

member formed by upsetting portions of the compression member, substantially as set forth.

4. A brake-beam having in combination a compression member having curved seats at its ends, a tension member having its end portions arranged on opposite sides of the compression member, the portions of the tension member connecting the sides or legs thereof, having a bearing on the seats of the compression member, a strut and means for applying a tension to the tension member, substantially as set forth.

5. A brake-beam having in combination a compression member having seats on its ends, a tension member having its ends divided and passing on opposite sides of the compression member, the portions connecting the legs or sides of the tension member bearing on the seats on the compression member, a strut and means for applying an equal strain to all parts of the tension member, substantially as set forth.

6. A brake-beam having in combination a compression member having circular convex seats formed on its ends, a U-shaped tension member, the closed portion of such member bearing upon the seat carried by the compression member, a strut and means for applying an equal tension to the parts of the compression member, substantially as set forth.

7. A brake-beam having in combination a compression member having a curved seat formed on its end, a U-shaped tension member, a bearing-block interposed between the tension member and the seat on the compression member, substantially as set forth.

8. A compression member for a brake-beam consisting of an I-beam having one of the flange portions at both ends of the beam upset to form seats or bearings for the tension member, substantially as set forth.

9. A brake-beam having in combination a compression member, a tension member, a bearing-block arranged on the ends of the compression member, the bearing-faces of the block and tension member being constructed to permit the block to move on the tension member, and a strut, substantially as set forth.

In testimony whereof I have hereunto set my hand.

JAMES H. BAKER.

Witnesses:
F. E. GAITHER,
DARWIN S. WOLCOTT.