No. 690,826.

Patented Jan. 7, 1902.

J. H. BAKER.

BRAKE BEAM.

(Application filed Oct. 21, 1901.)

(No Model.)

3 Sheets—Sheet 1.

FIG. 1.

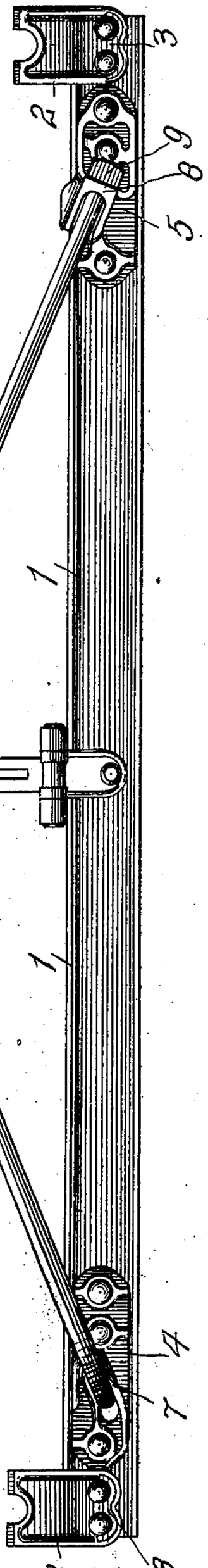


FIG. 2.

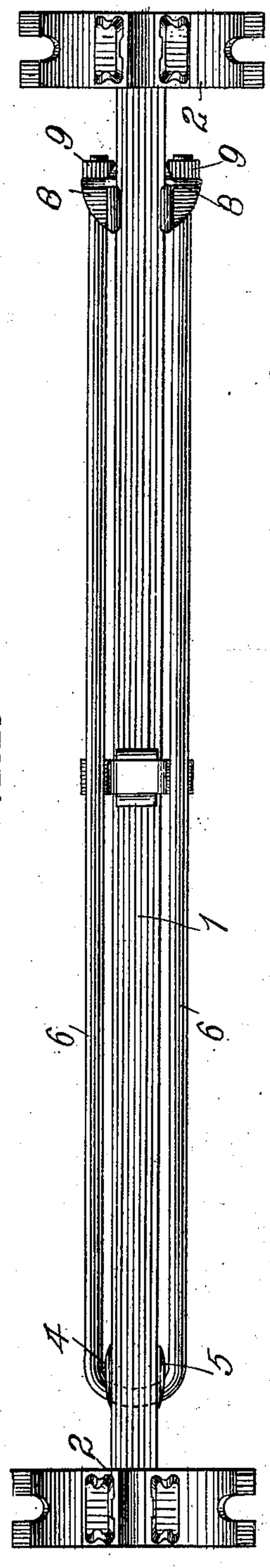


FIG. 4.

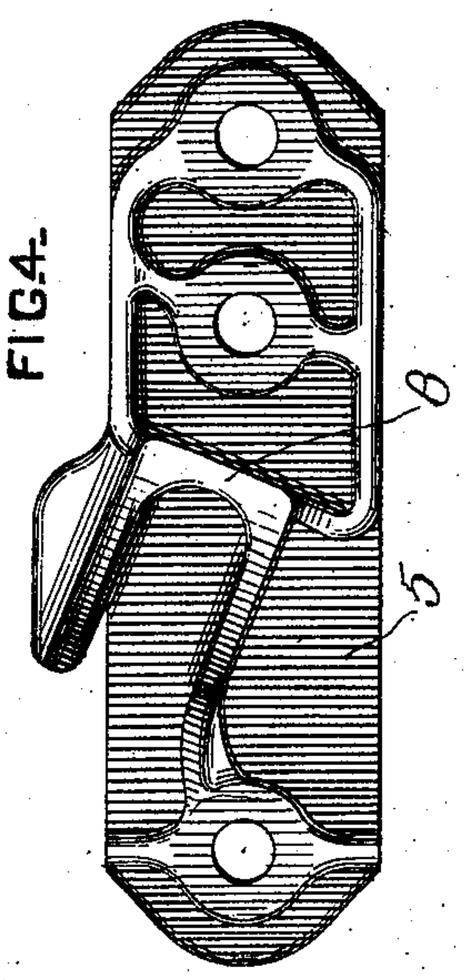
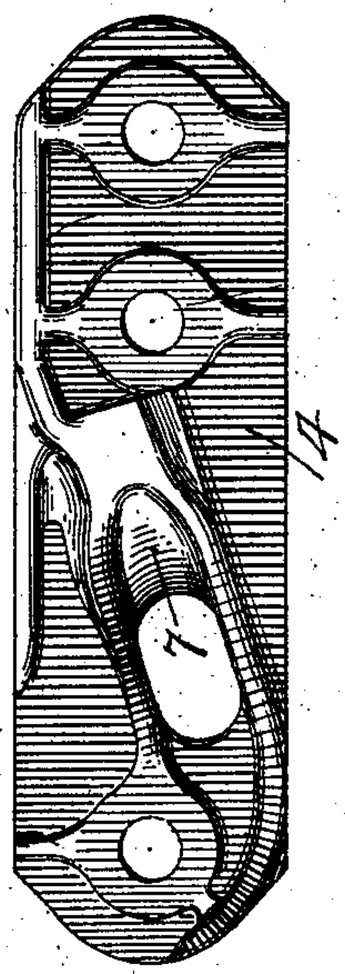


FIG. 3.



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3 Sheets—Sheet 2.

FIG.5.

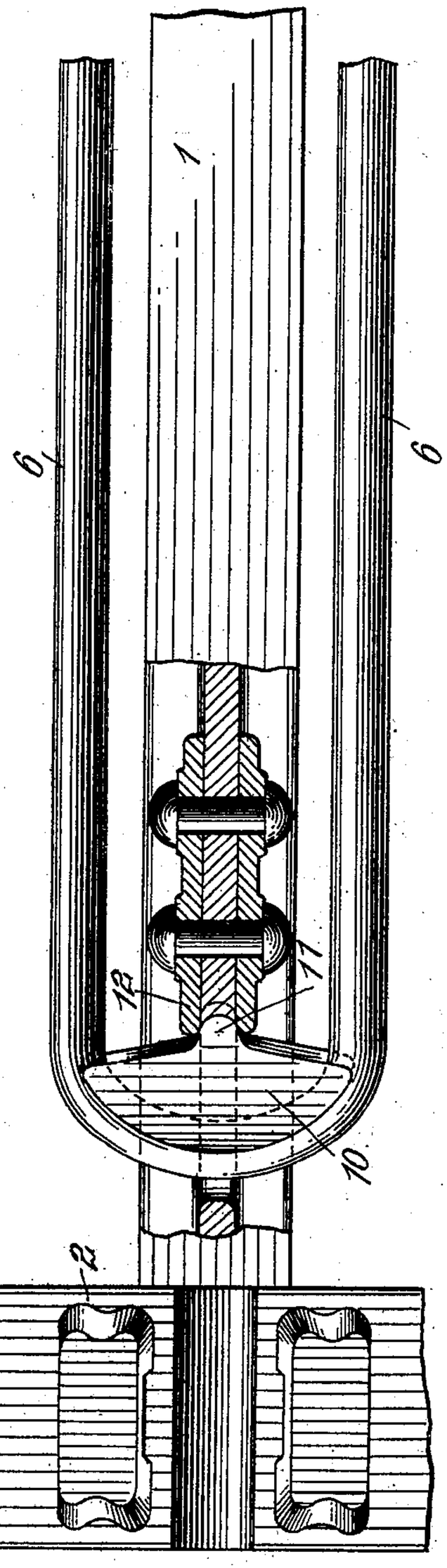
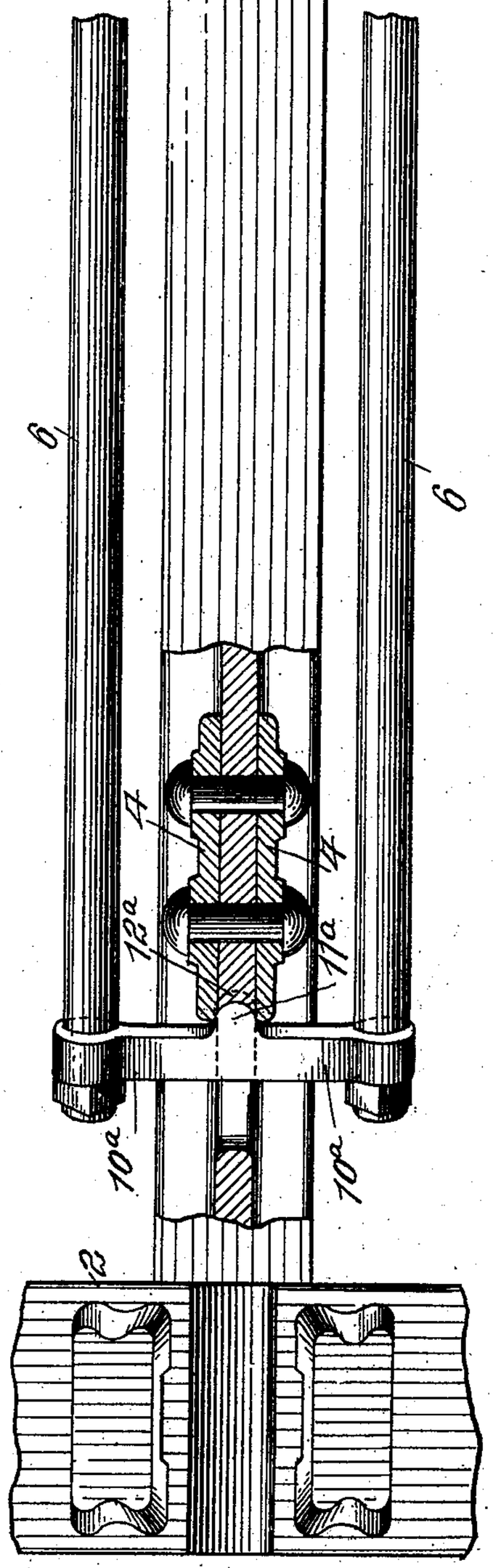


FIG.6.



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(No Model.) 3 Sheets—Sheet 3.

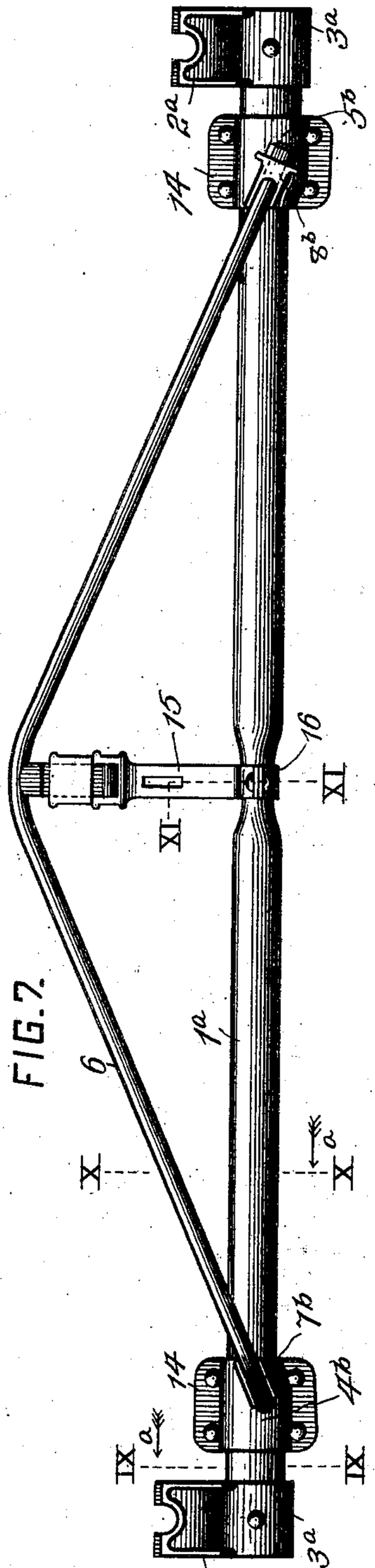

FIG. 2.

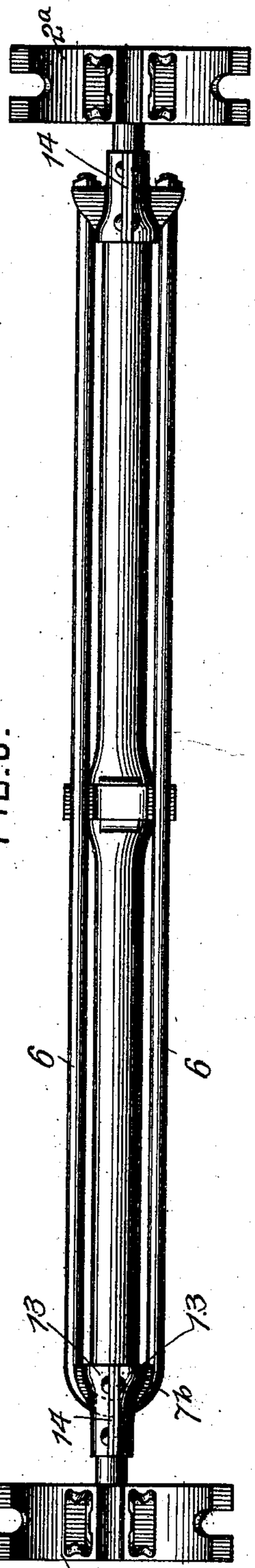

FIG. 8.

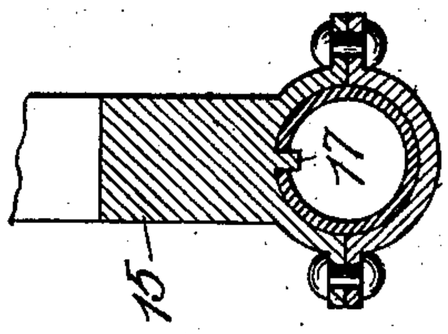

FIG. 12.

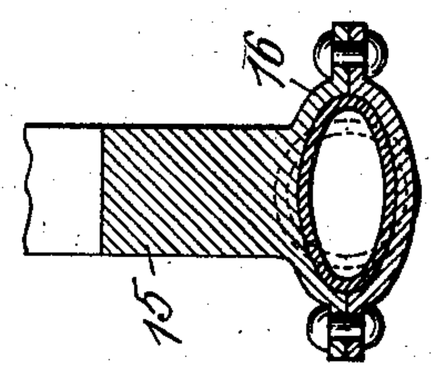

FIG. 11.

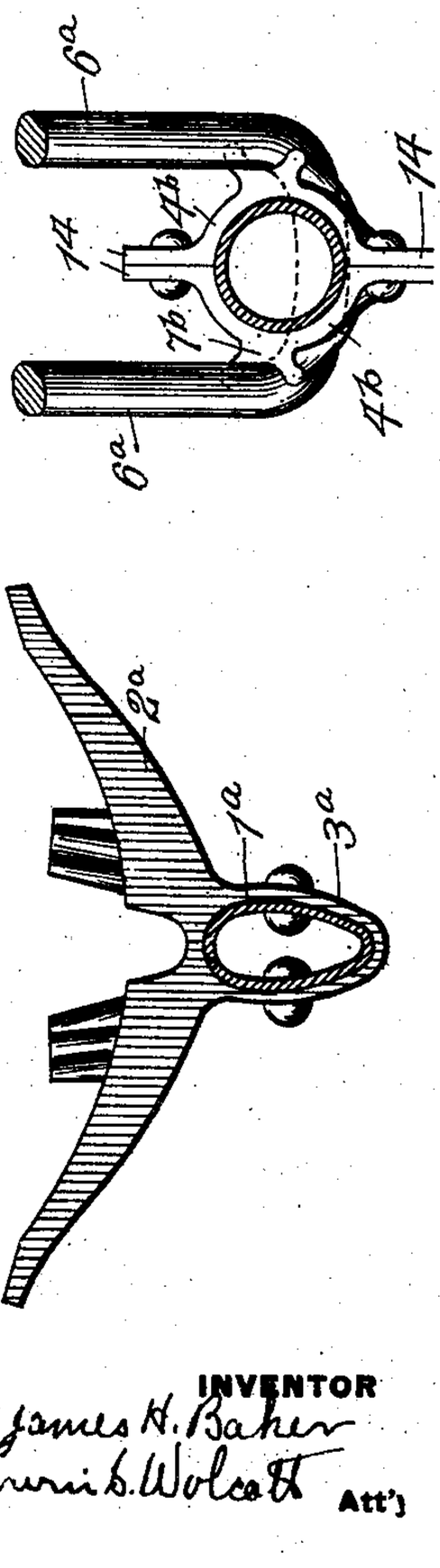

FIG. 10.

FIG. 9.

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UNITED STATES PATENT OFFICE.

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BRAKE-BEAM.

SPECIFICATION forming part of Letters Patent No. 690,826, dated January 7, 1902.

Application filed October 21, 1901. Serial No. 79,401. (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 brake-beams for cars, and has for its object a construction and arrangement of parts in a beam of the truss type, whereby the shoe-heads and the ends of the tension member may be secured to the compression member independent of each other.

It is a further object of the invention to provide for the employment of a two-part tension member and the equalization of strains between them.

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 my improved brake-beam. Fig. 2 is an edge elevation of the same. Figs. 3 and 4 are detail views, on an enlarged scale, of the reinforcing anchor-plates. Figs. 5 and 6 are views, partly in section and partly in elevation, of modifications in the manner of connecting the tension member to the compression member. Figs. 7 and 8 are plan and edge elevations, respectively, showing the application of my improvements to brake-beams having a tubular compression member. Figs. 9 and 10 are sectional views on planes respectively indicated by the lines IX IX and X X, Fig. 7, looking in the direction of the arrows *a*. Fig. 11 is a sectional view on a plane indicated by the line XI XI, Fig. 7; and Fig. 12 is a similar view illustrating a modification of my improvement.

In the practice of my invention as illustrated in Figs. 1 to 6, the compression member 1 is formed by a structural shape, as an I-beam, and the brake-shoe heads 2 are secured to the ends of the compression member in any suitable manner, but preferably by means of lugs or ears 3, formed on the heads and shaped to pass around one of the flanges of the beam and bear against the web. Rivets or bolts are employed to draw the ears or lugs against the web. Combined reinforcing and anchor plates 4 and 5 are riveted in position against the web at points inside the shoe-heads and closely adjacent thereto. It is preferred to employ a tension member 6, having its two parts or legs integral with each other at one end, and in such case openings are formed through the plates 4 and the web of the beam to permit of the passing of one of the legs or parts of the tension member. Curved seats 7 are formed on the plates for the reception of the loop portion of the tension member. The enlargements or projections on the plates forming the seats 7 extend outwardly sufficiently far to prevent the legs of the tension member being bent around the flanges of beam forming the compression member, as shown in Fig. 2. The plates 5, to which the free ends of the tension member are secured, are provided with projections or abutments 8, having openings formed therethrough. The outer faces of these projections or abutments are made flat or plain to afford good bearings for the tightening-nuts 9. The abutments 8 project outwardly beyond the flanges of the beam sufficiently to permit of the insertion of the ends of the tension member through the holes in the abutments without flexure.

It will be readily understood by those skilled in the art that the tension member may be formed of two independent rods, in which case plates similar to the plates 5 would be applied to both ends of the compression member.

The transverse curvature of the seats 7 should be preferably greater than the arc of a circle whose radius equals the diameter of the tension member, so that the loop portion of such member may slide along the seat to equalize the strains on the tension member. In order to more perfectly equalize the strains between the parts or legs of the tension member, the seat or bearing of the loop portion of the tension member may be formed on a rocking block or lever 10, passing through the plates 4 and the web of the beam, as shown

in Fig. 5. The block or lever has its pivotal point 11 mounted in the concave seat or bearing 12, formed in the plates and the web of the rail.

When the tension member is formed of two independent parts or legs, it is preferred that they should be connected to one end of the beam by plates 5, while their opposite ends are connected to a lever 10^a, passing through holes or openings in plates 4^a and the web of the rail, as shown in Fig. 6. This construction permits of the perfect equalization of strains between the two parts or legs of the tension member. The lever 10^a has its pivotal point 11^a mounted in the concave seat or bearing formed in the plates and the web of the rail.

While it is preferred to employ compression members formed of structural shapes or tubes, they may be made of other cross-sectional shapes. When the portion of the compression member through which the opening is made is thin, it is preferred to employ anchor-plates to increase the bearing-surfaces between the compression and tension members; but when the openings are formed through a sufficiently thick body of metal such plates are not necessary. While preferring to arrange the openings in the tension member inside of the brake-shoe heads, they may be located at any points within the ends of the compression member.

In applying my improvement to beams having a tubular compression member 1^a, as shown in Figs. 7 to 12, inclusive, the ends of the compression member should be given an egg shape in transverse section, the sharper ends being on the side away from the brake-shoe heads 2^a, so that such heads may have broader bearings on the compression member. The brake-shoe heads are provided with sockets on their rear faces adapted to fit over the egg-shaped portions of the compression member and are held in position as against longitudinal movement by means of rivets. This construction affords firm seats for the brake-shoe heads and locks the same as against any rotary movement without injury to or weakening of the compression member. The ends of the tension member, which is formed with two parts or legs, are connected to the compression member by means of anchor-plates 4^b and 5^b. These anchor-plates are so constructed as to fit around the compression member at the points where the egg-shaped portions of such member merge into the circular portion of the member, the plates fitting partially on the egg-shaped portion and partially on the circular portion. It will be observed that in flattening the ends of the compression member to form the egg-shaped portions shoulders 13 are formed on the compression member and that the anchor and reinforcing plates 4^b and 5^b will bear against these shoulders and will be held by such shoulders as against inward movement along the compression member. When the tension member has its two parts or legs formed integral with each other and connected by a loop, holes are formed through the plates 4^b and the compression member for the insertion of one of the legs, and transversely-curved seats 7^b are formed on the plates as bearings or seats for the loop portion of the tension member. The plates 5^b are formed with shoulders or abutments 8^b, and through these abutments are formed openings for the passage of the ends of the tension member. The outer faces of these abutments are made flat or plain, so as to afford good bearings for the tightening-nuts. As the seats 7 for the loop portion of the tension member have a curvature greater than the arc of a circle whose radius is equal to the diameter of the tension member, such loop portion can easily slide along the seats to equalize strains between the two parts or legs of the tension member. The plates 4^b and 5^b are provided with flanges 14, whereby they may be firmly riveted in position around the compression member.

In order to properly secure the strut 15 in position on the tubular compression member, the strut is provided at its inner end with curved flanges 16, adapted to fit part way around the compression member, and a half ring or sleeve provided with outwardly-projecting ears passes around the other part of the compression member and is secured to the flanges by rivets which draw the two parts tightly against the compression member. A pin or projection 17 is formed on the strut or sleeve and is adapted to project into a hole in the compression member, as shown in Fig. 12, thereby locking the strut as against any rotation on such member. Another and preferable way of locking the strut as against rotation consists in flattening the compression member at the point of attachment of the strut, making the compression member oval in cross-section, as shown in Fig. 11. It should be so flattened that the longer axis of the oval should be at right angles to the strut, thereby increasing the strength of the compression member as against buckling when in use. In this construction the strut is secured to the compression member in the manner described above—that is, it is provided at its lower end with curved flanges, and a half ring or sleeve is employed for drawing the strut against the compression member and securing it in position.

It will be observed that when the tension member is made so that its ends straddle the compression member the points of bearing or attachments of the ends of the tension member to the compression member are located in the median or neutral plane of the compression member, so that there will not be any weakening of the latter.

I claim herein as my invention—

1. A brake-beam having in combination, a compression member, a tension member hav-

ing its end portions divided and passing on opposite sides of the compression member, and means passing through the compression member for connecting the ends of the tension member to each other and forming the bearing between the tension and compression members, substantially as set forth.

2. A brake-beam having in combination, a compression member, a tension member, a strut, brake-shoe heads and two pairs of anchor-plates secured to opposite sides of the compression member inside of the points of attachment of the brake-shoe heads, the ends of the tension member adjacent to the compression member being divided and secured to the anchor-plates on opposite sides of the compression member, substantially as set forth.

3. A brake-beam having in combination, a compression member, anchor-plates secured to the compression member, a tension member formed in two parts, a strain-transmitting member passing through the anchor-plates and compression member near one end of the latter and bearing on said parts, the parts of the tension member being connected at one end to the strain-transmitting member and at the other ends to the anchor-plates near the opposite end of the compression member, substantially as set forth.

4. A brake-beam having in combination, a compression member, anchor-plates secured to the compression member at points adjacent to its ends, a lever passing through openings in the anchor-plates and compression member adjacent to one end of the compression member, and having a pivotal bearing on said parts, a tension member formed in two parts, said parts being connected at one end to the lever and at their opposite ends to the anchor-plates secured to the compression member at that end, a strut, and brake-shoe heads secured to the ends of the compression member, substantially as set forth.

5. A brake-beam having in combination, a tubular compression member having its end portions egg-shaped and the inner portions adjacent thereto circular or substantially so in cross-section, thereby forming shoulders adapted to prevent the inward movement of the brake-shoe heads, a tension member, a strut and brake-shoe heads mounted on the egg-shaped portions, substantially as set forth.

6. A brake-beam having in combination, a tubular compression member having portions at its ends flattened to form egg-shaped bearings at such ends, brake-shoe heads provided with egg-shaped sockets adapted to fit the bearing portions of the compression member, anchor-plates secured to the compression member inside of the brake-shoe heads and bearing against shoulders formed by flattening the end portions of compression member, and a strut, substantially as set forth.

7. A brake-beam having in combination, a compression member, brake-shoe heads secured to the ends of the compression member, anchor-plates secured to the compression member and bearing against shoulders formed on the compression member at points intermediate of its ends, a tension member having its ends connected to the anchor-plates, and a strut, substantially as set forth.

8. A brake-beam having in combination, a tubular compression member, brake-shoe heads secured to the ends of the compression member, a tension member having its ends connected to the compression member at or near the ends thereof, a strut mounted on a seat formed on the compression member formed by flattening the middle portion of the compression member, the longer axis of the flattened portion being in or approximately in a vertical plane when the beams are in use, substantially as set forth.

9. A brake-beam having in combination, a tubular compression member having its ends flattened to form egg-shaped bearing portions, brake-shoe heads secured to such egg-shaped bearings, anchor-plates secured around the compression member at the points of junction of the bearing portions with the body of the compression member, a tension member secured to said anchor-plates, and a strut, substantially as set forth.

In testimony whereof I have hereunto set my hand.

JAMES H. BAKER.

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