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R. V. SAGE.
BRAKE BEAM AND FLANGED BAR THEREFOR.
APPLICATION FILED APR. 29, 1905.

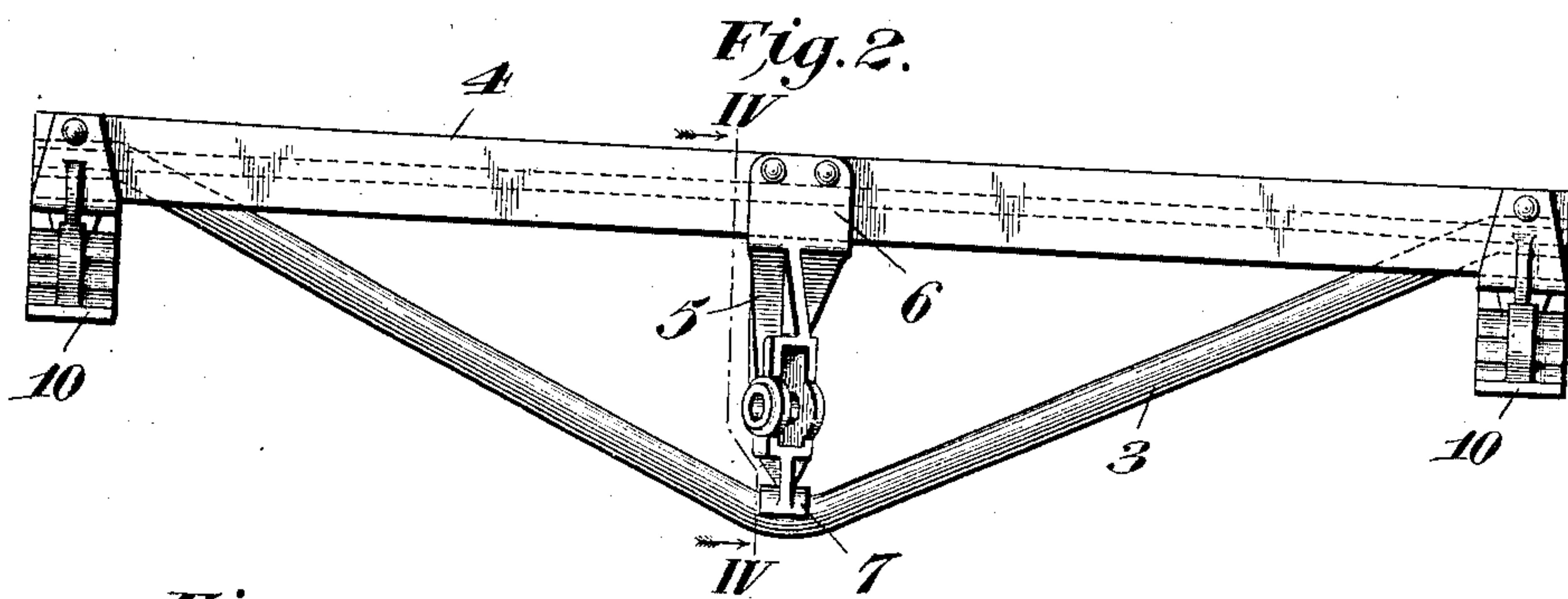
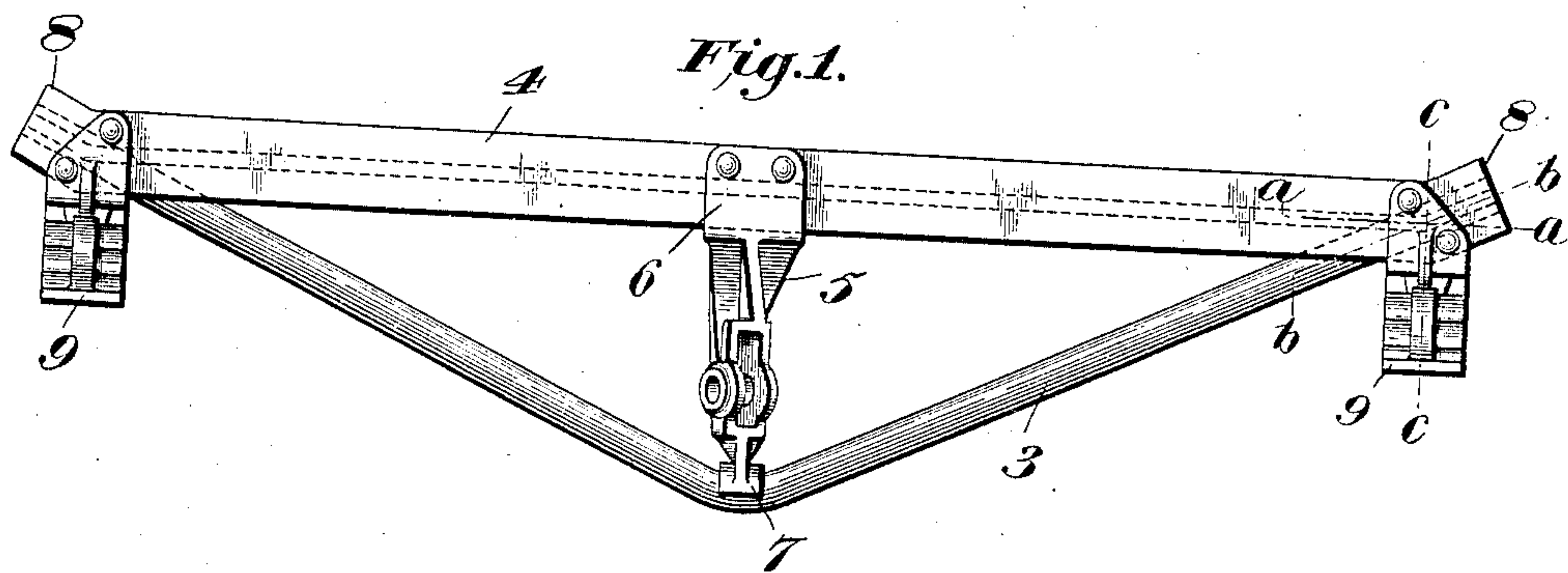


Fig. 3.

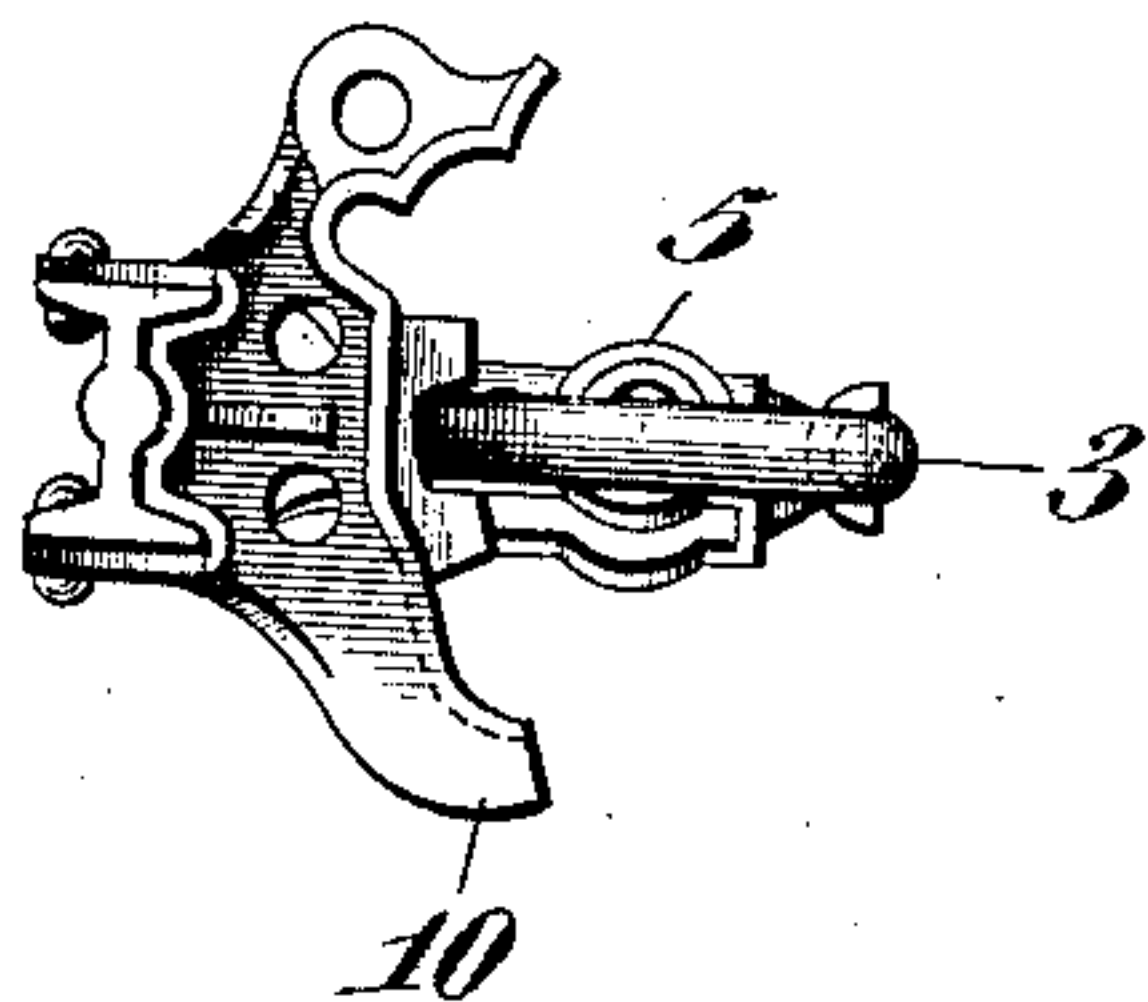


Fig. 5.

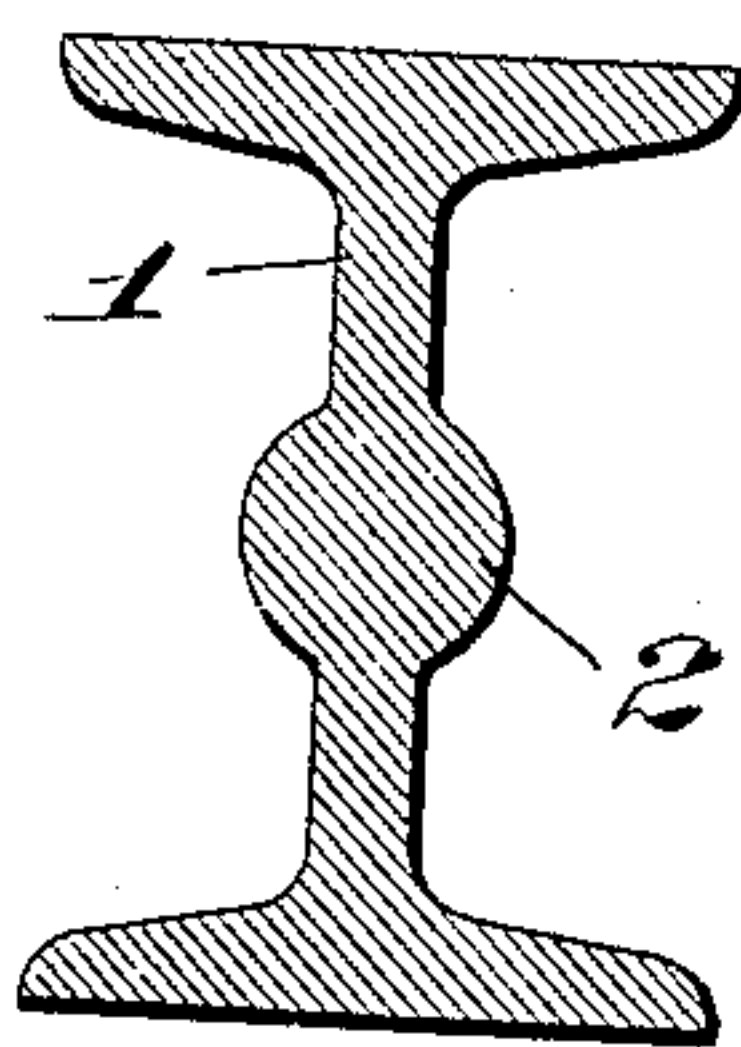


Fig. 4.

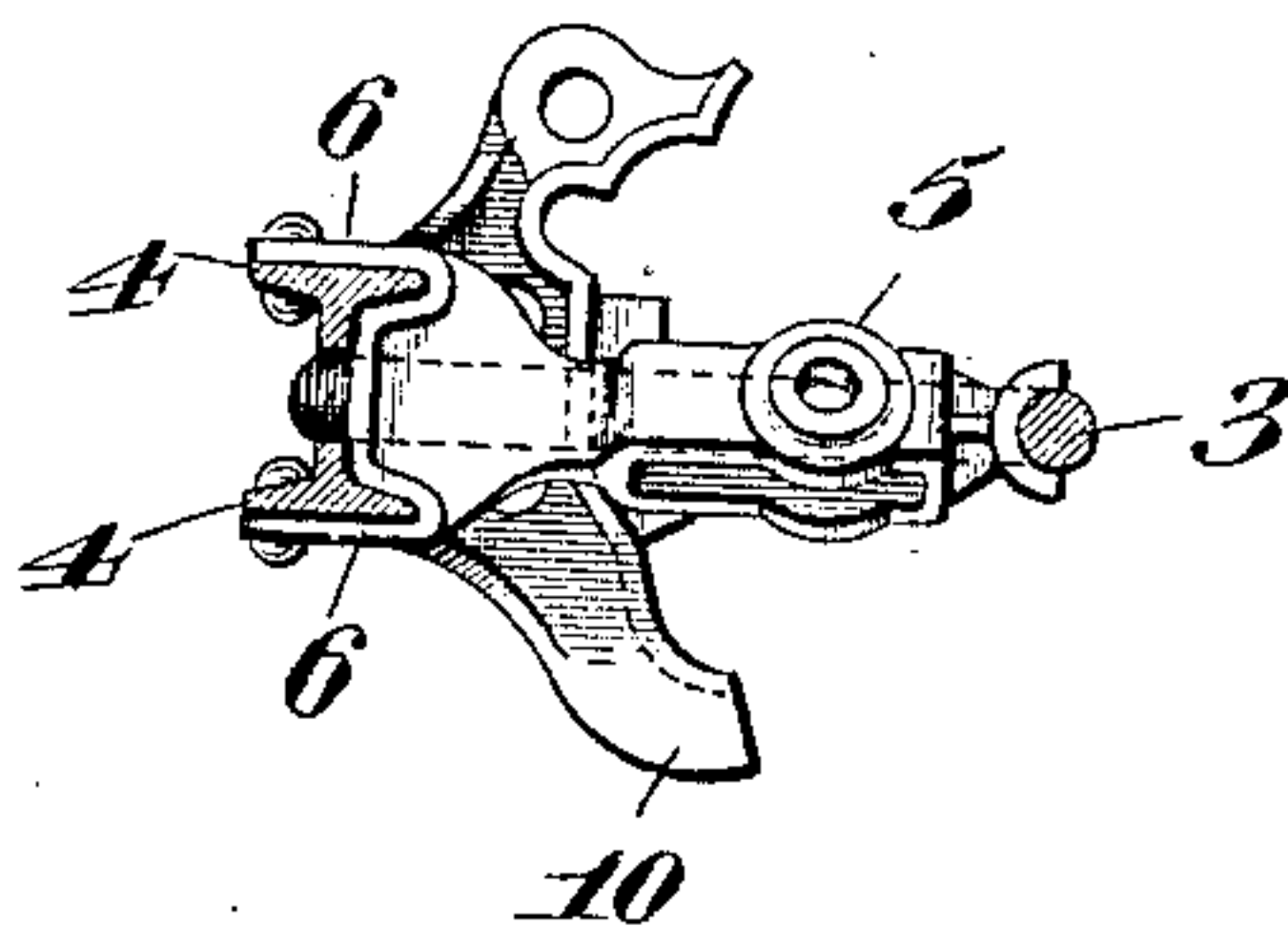
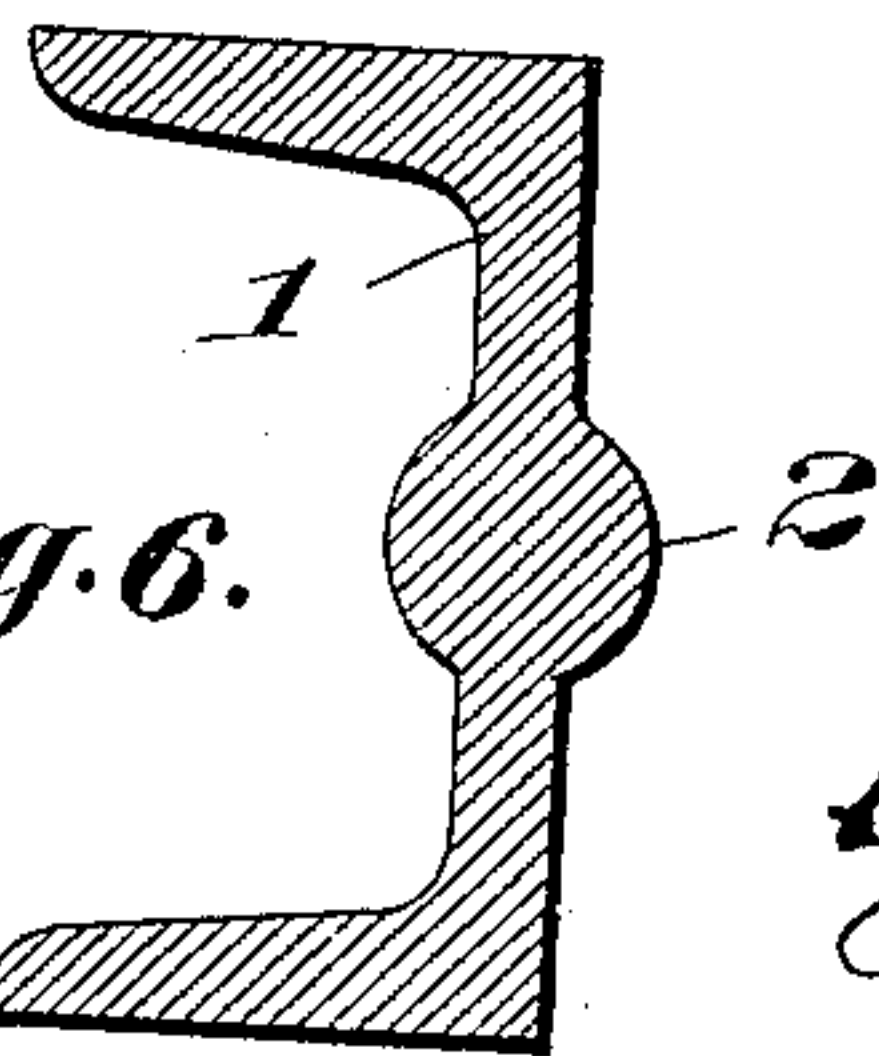


Fig. 6.



WITNESSES,

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BRAKE-BEAM AND FLANGED BAR THEREFOR.

No. 829,673.

Specification of Letters Patent.

Patented Aug. 28, 1906.

Application filed April 29, 1905. Serial No. 258,092.

To all whom it may concern:

Be it known that I, RALPH V. SAGE, a citizen of the United States, residing in the borough of Westmont, in the county of Cambria and State of Pennsylvania, have invented certain new and useful Improvements in Brake-Beams and Flanged Bars Therefor; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates in general to flanged metal bars and the construction of trussed beams made therefrom.

It has for its object to provide a bulb-web flanged metal bar from which both the compression and tension members of a trussed beam may be made.

A further object is to provide a trussed beam in which the compression member is formed from the flanged portion and the tension member from the bulb-web portion of a flanged metal bar, whereby the cost and weight of such beams may be reduced, the details simplified, and their strength and rigidity increased.

An embodiment of the invention is herein illustrated in the form of a brake-beam for railway-cars and the like, although it is evident that it may be used wherever such a construction is desirable.

Referring to the sheet of drawings forming a part of this specification, in which like characters of reference designate like parts, Figure 1 is a plan view of a brake-beam, showing the preferred form thereof. Fig. 2 is a plan view of a modified form of such a brake-beam. Fig. 3 is an end elevation of the form shown in Fig. 2. Fig. 4 is a transverse sectional elevation taken on the planes indicated by the broken line IV IV of Fig. 2 viewed in the direction indicated by the arrows. Fig. 5 is a transverse sectional elevation, on an enlarged scale, of the preferred form of my improved bulb-web flanged bar. Fig. 6 is a transverse sectional elevation, on an enlarged scale, of a modified form of my bulb-web flanged bar.

My invention involves, first, the construction of a flanged bar, the preferred form of which is shown in Fig. 5 and a modified form in Fig. 6. The web 1 of the bar is provided with an enlarged portion or bulb 2 intermediate of its edges, which bulb extends longitudinally thereof. Although only two forms of

flanged bars are shown herein, it is evident that any other desired section may be used at will, the only requirement being that each element be sufficiently strong to meet the duty imposed upon it. Such bars may be rolled in the usual way or formed in any desired manner.

In the construction of a trussed beam from such a bar as above described the bulb portion is sheared out for a portion of its length and deflected laterally to form the tension or truss member 3, as shown in Figs. 1 and 2. This leaves the flanged portions 4 to form the compression member, and if this member is to remain straight, or substantially so, as herein shown, the stock from which the tension member is formed will of course need to be lengthened. It is evident that the compression member might be shortened; but since there is less material in the tension member the preferable method will be to lengthen or stretch the same. Either method may be employed, as desired, and either operation performed, hot or cold, as expedience may suggest. I may also camber the member 4.

Located between the compression and tension members at the apex of the latter is a strut 5, as is usual. At one end this strut is made to conform with the outline of the compression member and is provided with flanges 6, as shown in Fig. 4, which embrace and are secured, respectively, to the two elements of this member and serve to hold the same together and to make the strut a part of the beam. At the other end of the strut is formed a saddle 7, which is adapted to receive the tension member. It will be observed that the ends of the beam are left intact, making both the compression and tension members integral at said ends, thereby preventing the possibility of any of the members loosening and forming a solid and simple connection. In the preferable form of the trussed beam shown in Fig. 1 the ends thereof are bent respectively into line with the adjacent portion of the tension members, thereby reducing the tendency to bend or break transversely or to shear or split longitudinally. The strength of the beam is consequently increased, since the tensional stress existing in the tension member is resisted by these bent ends and the compression member in the direction of their length.

When the above-described trussed beam is used as a brake-beam for railway-cars and the

like, the strut 5 is used as a fulcrum-post and is provided with the usual means for pivoting the brake-lever. Shoe-heads also are secured at or near the ends of the beam to receive the usual brake-shoes. The form of beam shown in Fig. 1 is especially desirable when used in this connection, since it permits the shoe-head 9 to be so located that the force resulting from the pressure applied to the beam in use and acting in the direction of the line of the center of gravity of the shoe-head is applied at the intersection of the lines of the centers of gravity of the compression and tension members, as indicated by lines *a a*, *b b*, and *c c*, thus obviating secondary stresses, and thereby conducing to a good and economical structure. It will be noticed that shoe-head 10 is not so located, but that the entire beam is shorter, and hence desirable from this standpoint. Any desired means may be provided for securing the shoe-heads to the beam; but they are preferably made to conform with the outline of the beam and are provided with flanges, which embrace the beam and are secured thereto in the same manner that the strut is secured, as above described.

A variety of modifications of the invention which do not depart from the spirit thereof will readily suggest themselves to one skilled in the art. Hence it is not the intention to limit this application to the precise forms herein shown, but to have it construed as broadly as the invention merits.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A trussed beam, the compression and tension members of which are integral at the ends thereof, and are formed from a flanged metal bar having a web provided with an enlarged portion intermediate of its edges, said compression member being formed from the flanged portion of said bar and said tension member from the enlarged portion of said web.

2. A trussed beam, the compression and tension members of which are integral at the ends thereof, and are formed from a metal bar flanged at its edges and having a web provided with a bulb-like enlargement, said compression member being formed from the flanged portions of said bar, and said tension member from the bulb-like enlargement of said web.

3. A trussed beam, the compression and tension members of which are integral at the ends and are formed from a flanged metal bar having a web provided with an enlarged portion intermediate of its edges, said inte-

gral ends being bent into line with the adjacent portion of said tension members, the compression member being formed from the flanged portion of said bar and the tension member from the enlarged portion of said web.

4. A trussed beam, comprising compression and tension members integral at their ends and formed from a metal bar having a web, flanges at the edges of said web and a portion of approximately circular cross-section integral with said web, said integral ends being bent into line with the adjacent portion of said tension member, the compression member being formed from the flanged portion of said bar, the tension member from the circular portion of said web, and a central strut interposed between said tension and compression members intermediate of their ends.

5. A trussed brake-beam comprising compression and tension members integral at the ends and formed from a flanged metal bar having a web provided with an enlarged portion intermediate of its edges, said integral ends being bent into line with the adjacent portion of said tension members, the compression member being formed from the flanged portion of said bar and the tension member from the enlarged portion of said web, a fulcrum-post strut secured to and embracing said compression member, and brake-shoe heads secured to said beam and so located that their lines of center of gravity pass through the intersection of the lines of center of gravity of said members.

6. A flanged metal bar for brake-beams having a web each side of which is provided with an enlarged portion intermediate of its edges and longitudinal thereof.

7. A metal bar for brake-beams flanged at its edges and having a web each side of which is provided with an enlarged portion extending longitudinally thereof.

8. A metal bar for brake-beams provided with flanges at its edges and having a web provided with a bulb-like enlargement intermediate of said flanges which extends longitudinally thereof.

9. A metal bar for brake-beams comprising a web, flanges at the edges of said web, and an enlarged portion of approximately circular cross-section integral with said web and longitudinal thereof.

In testimony whereof I hereto affix my signature in the presence of two witnesses.

RALPH V. SAGE.

Witnesses:

ELMER SEAVEY,

CHAS. N. CHAMBERS.