July 22, 1924. 1,501,899

S. A. CRONE

STRUT FOR RAILWAY BRAKE BEAMS

Filed Oct. 11, 1922

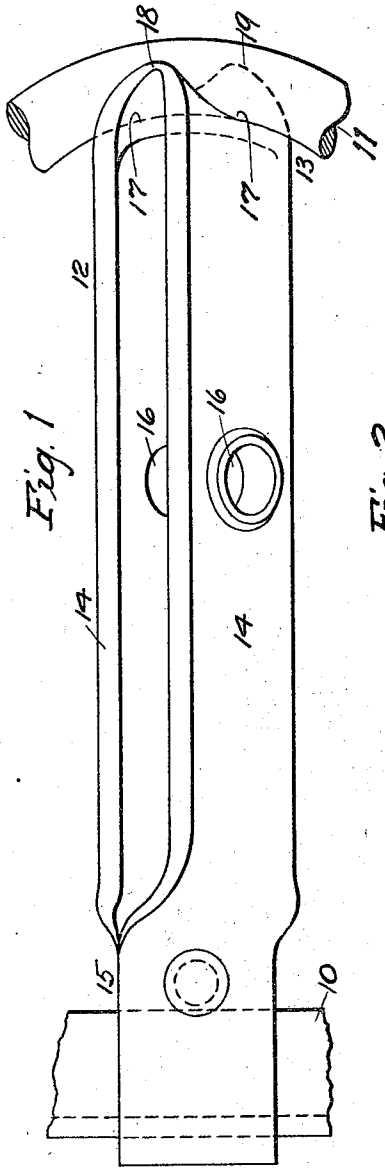


Fig. 1

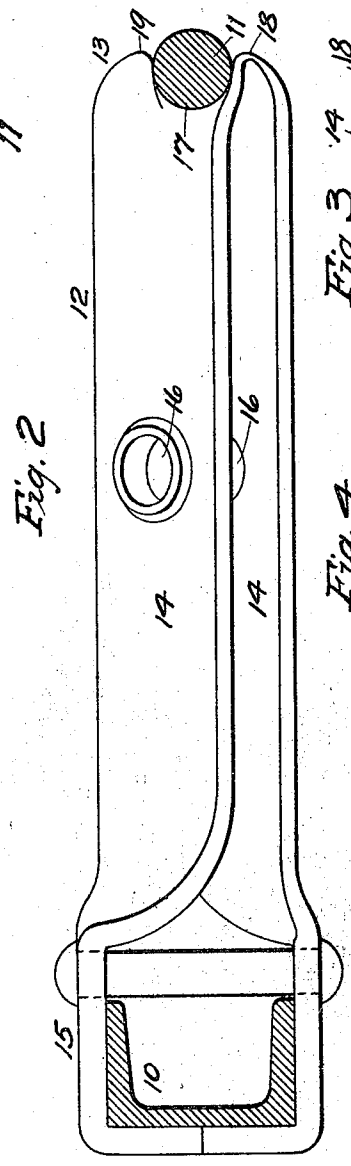


Fig. 2

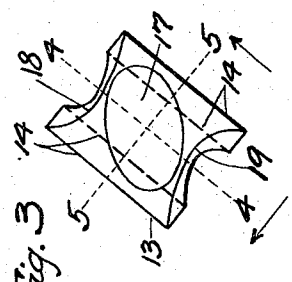


Fig. 3

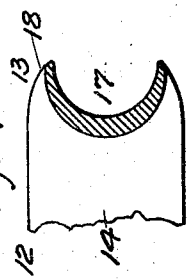


Fig. 4

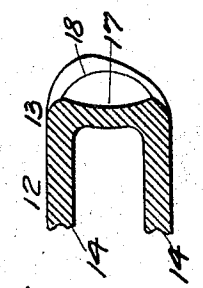


Fig. 5

INVENTOR

Seth A. Crone

BY

Chas. C. Gill

ATTORNEY

Patented July 22, 1924. 1,501,899

UNITED STATES PATENT OFFICE.

SETH A. CRONE, OF EAST ORANGE, NEW JERSEY.

STRUT FOR RAILWAY BRAKE BEAMS.

Application filed October 11, 1922. Serial No. 593,667.

To all whom it may concern:

Be it known that I, SETH A. CRONE, a citizen of the United States, and a resident of East Orange, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Struts for Railway Brake Beams, of which the following is a specification.

The invention pertains to trussed brake-beams for railway cars and especially to a novel strut interposed between the compression and tension members of the beam.

One object of the invention is to provide from a single folded forged metal bar a novel one-piece strut having at the front end thereof a seat, integral with the strut, to receive the middle portion of the tension member of the beam. The strut of my invention possesses great strength, durability and efficiency without undue weight of metal and also special advantages in respect to its readiness of manufacture and capability of withstanding the severe treatment to which struts of truss brake-beams are subjected. Another object of the invention is to provide an integral seat forward of the normal sides of the strut without robbing the sides of the strut therefor and consequently without depriving the brake-lever of its usual operating space between said sides, and a further object of the invention is to form the truss rod seat at the forward end of the strut without twisting the sides of the strut at said end.

The two side portions of my strut stand at the usual angle of forty degrees from the vertical, and, at the forward end of the strut, the metal in the transverse U-bend thereof forward of said sides is formed with a novel bearing recess to receive the central portion of the truss-rod. The strut is formed out of a single bar of forged metal of uniform width and thickness bent into approximately U-form, the seat at the forward end of the strut being constructed wholly from and in the metal in the forward U-bend connecting the sides of the strut without disturbing the metal in said sides and with economy in the use of metal and labor in the production of the strut. The strut at its rear or back end may be formed in any suitable manner to engage the compression member made use of, and the sides of the strut adjacent to the compression member have the usual forty degree twist, while the forward end of the strut is left in the original formation created by evenly folding the bar at its middle portion to form the sides of the strut, except that in the transverse fold of the bar I form the seat for the tension member.

The invention will be fully understood from the detailed description hereinafter presented, reference being had to the accompanying drawings, in which:

Fig. 1 is a plan view, partly broken away, of a trussed brake beam for railway cars embodying my invention;

Fig. 2 is a side elevation of the same, with the compression and tension members shown in vertical transverse section;

Fig. 3 is a front end view of the strut;

Fig. 4 is a section through the same, taken on the dotted line 4—4 of Fig. 3, and

Fig. 5 is a section through the same, taken on the dotted line 5—5 of Fig. 3.

In the drawings, 10 designates the compression member, 11 the tension member and 12 the strut of a trussed brake-beam for railway cars, said strut being constructed in accordance with my invention.

The strut 12 is formed from a single bar of forged metal of uniform width and thickness folded on an approximately U-bend at its middle portion to provide a front end 13, corresponding properly spaced apart, parallel sides 14 to receive between them the usual brake-lever, not shown, and a back end 15, the sides 14 being provided with corresponding reinforced openings 16 for the brake lever pin, not shown, the back end 15 of the strut being of any suitable formation to engage the compression member and the front end of the strut being of special and novel formation.

In the transverse portion or fold at the front end of the strut is formed a horizontally extending elongated concave bearing seat 17 to receive the middle portion of the truss-rod 11, and this bearing seat is formed by insetting along a horizontal line a suitable width of what normally constitutes the forward diagonally disposed U-bend or fold of the bar and displacing the outer diagonally opposite end edge portions of said U-bend forwardly and inwardly, thereby to form an adequate horizontal seat or bearing 17 for the truss-rod having forwardly projecting top and bottom members 18, 19, respectively, which add to the depth and efficiency of the seat and serve to confine the truss-rod at upper and lower edges there-

of. The concave recess or bearing seat 17 lies horizontally, as shown in Figs. 1 and 3, and extends upon and across the longitudinal planes of the angularly disposed sides 14 of the strut, whereby strains placed on the strut by the truss-rod are exerted longitudinally against and through the length of said sides 14. The seat 17 lies on a horizontal line across the greater width of the angularly set end of the strut, as shown in Fig. 3, and hence the seat is of the maximum length afforded by the fold-end of the strut, and said seat 17 while being concave has also a convex surface to be engaged by the arcuate bend in the truss-rod, as shown in Fig. 1.

It is to be noticed that the seat 17 is formed wholly from the metal in the fold of the bar and that in its formation the sides of the strut are not disturbed or robbed of their metal or shortened. The forwardly projecting members 18, 19 are formed by drawing or displacing the opposite parallel end edge portions of the fold of the bar or strut forwardly and inwardly on lines continuing the concave lines created by the insetting of the metal of the fold between and at an angle to said end edge portions, the offsetting forwardly of said end edge portions and the insetting of said intermediate portion of the fold in the bar combining to produce a truss rod seat of adequate character. The drawing or displacing of the opposite end edge portions of the fold of the bar or strut forwardly and inwardly results in said portions being stretched or thinned and in their being caused to approach each other, being moved from their normal straight parallel relation to the inwardly curved line relation represented at the upper right and lower left hand portions of Fig. 3 and also in Fig. 4.

It is also to be noticed that in the formation of the seat 17 in accordance with my invention, I do not give the sides at the front end of the strut a preliminary angular twist but leave said sides entirely normal and in their original state, confining my operations to the fold forward of said sides, which fold I subject to dies acting to concave the said fold along a line which is horizontal to the angular set of the end of the strut and at the same time and as a part of the same operation displace the metal at the diagonally opposite end portions of the fold of the strut forwardly to form the projections 18, 19 and deepen the seat 17.

In my pending application Serial No. 579,025, filed August 1, 1922, I illustrate and describe suitable dies for producing the forward end hereinbefore described of the forged metal strut.

In accordance with my present experience, I have found it to be easier to first bend the forged metal bar to form the parallel sides 14 and forward U-bend and then form the truss-rod seat in this bend, as distinguished from folding the bar and forming the truss rod seat at a single operation.

In carrying out my invention the thickness of the bar is left substantially unaffected except at the fold thereof which by the insetting of a portion of the fold and the offsetting forwardly of the end portions of the fold, becomes of somewhat irregular or varied thickness. The method pointed out for the formation of the truss rod seat in the forward end of the strut is efficient and may be readily performed and is advantageous in the matter of rendering the process of manufacturing simple, comparatively inexpensive and economical in that there is no waste of metal involved, while at the same time securing the requisite degree of strain-resisting power in the strut.

In offsetting the end edges of the fold at the forward end of the strut, the metal is stretched more greatly at those points of said edges more nearly centrally above and below the space for the truss-rod, whereby the projections 18, 19 become acute at the apexes of the said edges of said fold, as shown in Figs. 1 and 2 and also at the upper and lower portions of Fig. 3. In Fig. 3 it may be seen that in the upper left hand end and lower right hand end, the curvature of the end edges of the forward fold are on gradual curves corresponding with the upper and lower edges of the front of the strut shown in Fig. 1, while adjacent to the upper and lower ends of Fig. 3 the curvatures to form the projections 18, 19 are more acute, as shown in Figs. 1 and 2, one reason for this being that the metal is capable of being projected forwardly to a greater extent at the points 18, 19, because there is more metal above and below the seat 17 than there is at the ends of said seat.

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

1. A strut to be interposed between the compression and tension members of a trussed brake-beam and formed from a single integral bar of forged metal of uniform width and thickness, said bar being folded on a U-bend at the forward end of the strut and forming parallel angularly set spaced-apart sides connected together by said forward fold, and the forward end of the strut at said fold being concavely inset on a line horizontally crossing the said angularly set sides and offset forwardly at the end portions of said fold, thereby to form a concave seat for the truss rod and upper and lower forwardly extending projections serving to deepen the seat and engage upper and lower portions of said rod.

2. A strut to be interposed between the compression and tension members of a trussed brake-beam and formed from a

single integral bar of forged metal of uniform width and thickness, said bar being folded on a U-bend at the forward end of the strut and forming parallel angularly set spaced-apart sides connected together by said forward fold, and the forward end of the strut at said fold being concavely inset on a line horizontally crossing the said angularly set sides and offset forwardly and inwardly at the opposite diagonally set end edge portions of said fold on lines continuing the concavity of said inset portion, thereby to form a concave seat for the truss rod and upper and lower forwardly extending projections serving to deepen the seat and engage upper and lower portions of said rod.

3. A strut to be interposed between the compression and tension members of a trussed brake-beam and formed from a single integral bar of forged metal of uniform width and thickness, said bar being folded on a U-bend at the forward end of the strut and forming parallel angularly set spaced-apart sides connected together by said forward fold, and the forward end of the strut at said fold being concavely inset on a line horizontally crossing the said angularly set sides and offset forwardly at the end portions of said fold, thereby to form a concave seat for the truss rod and upper and lower forwardly extending projections serving to deepen the seat and engage upper and lower portions of said rod, said seat and projections being formed from the metal in the fold of the bar.

4. A strut to be interposed between the compression and tension members of a trussed brake-beam and formed from a single integral bar of forged metal of uniform width and thickness, said bar being folded on a U-bend at the forward end of the strut and forming parallel angularly set spaced-apart sides connected together by said forward fold, and the forward end of the strut at said fold being concavely inset on a line horizontally crossing the said angularly set sides and offset forwardly at the end portions of said fold, thereby to form a concave seat for the truss rod and upper and lower forwardly extending projections serving to deepen the seat and engage upper and lower portions of said rod, said seat and projections being formed from the metal in the fold of the bar and lying between the planes of the outer surfaces of the angularly set parallel sides of the strut.

5. A strut to be interposed between the compression and tension members of a trussed brake-beam and formed from a single integral bar of forged metal of uniform width and thickness, said bar being folded on a U-bend at the forward end of the strut and forming parallel angularly set spaced-apart sides connected together by said forward fold, and the forward end of the strut at said fold being concavely inset on a line horizontally crossing the said angularly set sides and offset forwardly at the end portions of said fold, thereby to form a concave seat for the truss rod and upper and lower forwardly extending projections serving to deepen the seat and engage upper and lower portions of said rod, said concave seat being horizontally convexed along the line of its length to adapt the same to the arcuate formation of that portion of the truss rod the seat is to receive.

6. A strut to be interposed between the compression and tension members of a trussed brake-beam and formed from a single integral bar of forged metal of uniform width and thickness, said bar being folded on a U-bend at the forward end of the strut and forming parallel angularly set spaced-apart sides connected together by said forward fold, and the forward end of the strut at said fold being concavely inset on a line horizontally crossing the said angularly set sides and offset forwardly at the end portions of said fold, thereby to form a concave seat for the truss rod and upper and lower forwardly extending projections serving to deepen the seat and engage upper and lower portions of said rod, the offsetting of the end edge portions of said fold being greater at diagonal points substantially central over the upper and lower sides of said seat than above and below the end portions of said seat.

Signed at New York city, in the county of New York and State of New York, this 9th day of October, A. D. 1922.

SETH A. CRONE.