(No Model.) 2 Sheets—Sheet 1.

C. T. SCHOEN & L. W. NEWTON.

BRAKE BEAM AND SHOE HEAD.

No. 450,760. Patented Apr. 21, 1891.

Fig. 1.

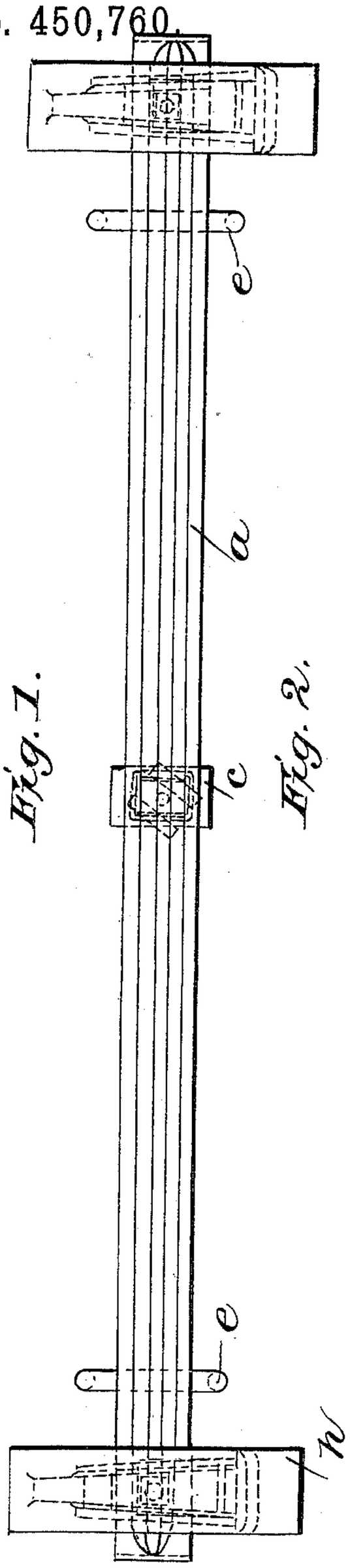

Fig. 2.

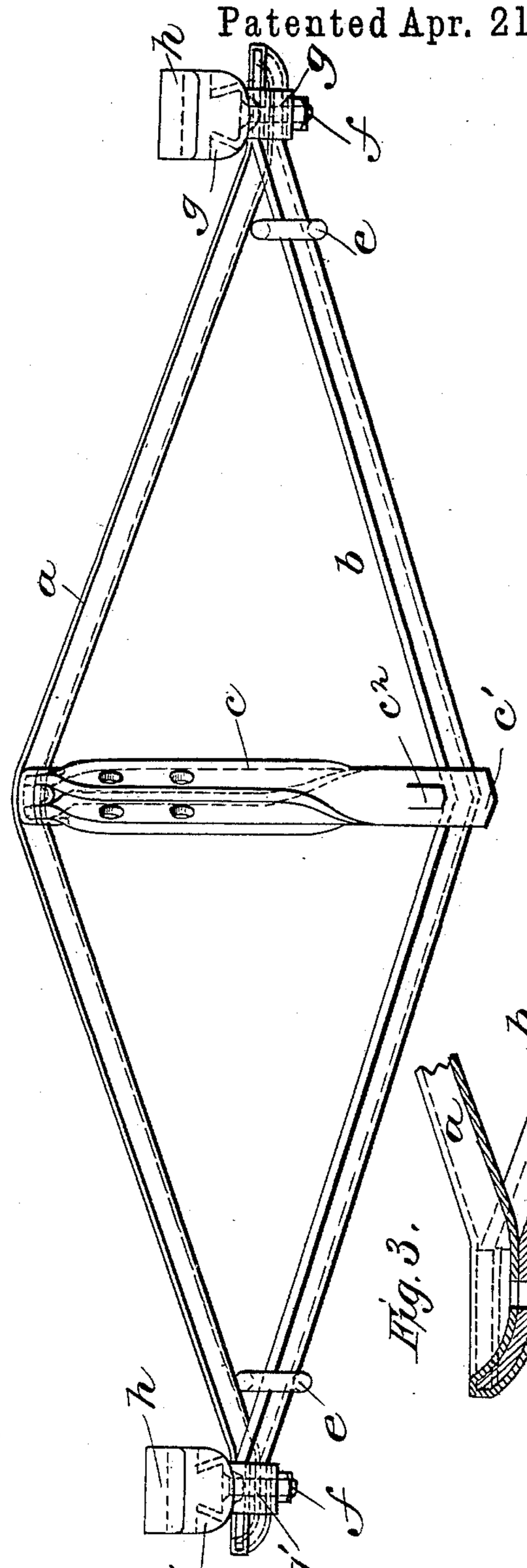

Fig. 3.

Fig. 4

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(No Model.)

2 Sheets—Sheet 2.

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Fig. 7.

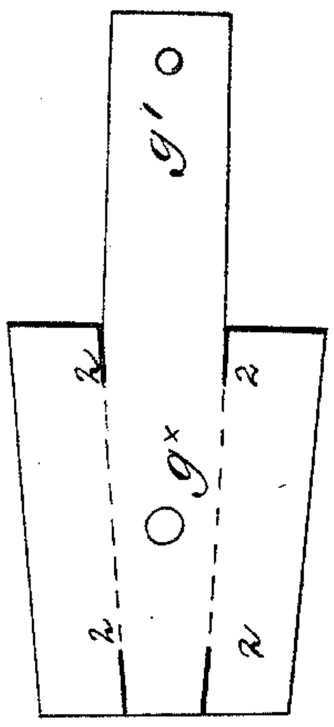


Fig. 8.

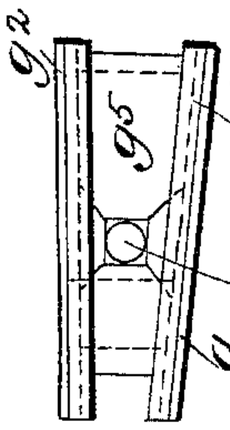


Fig. 9.

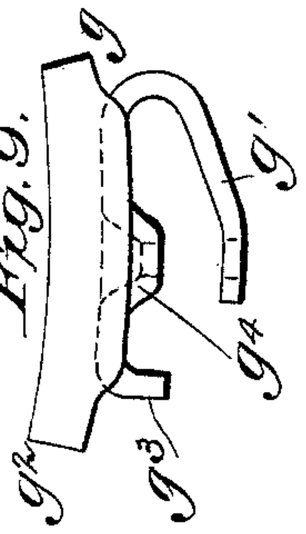


Fig. 10.

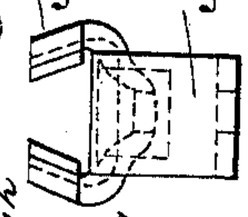


Fig. 14.

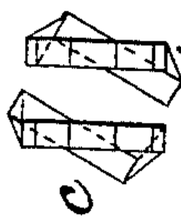


Fig. 16.

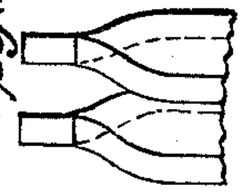


Fig. 11

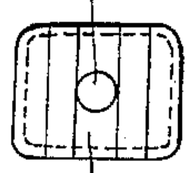


Fig. 15

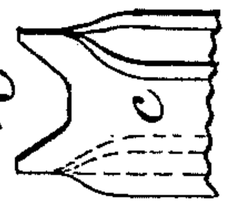


Fig. 12.

Fig. 13

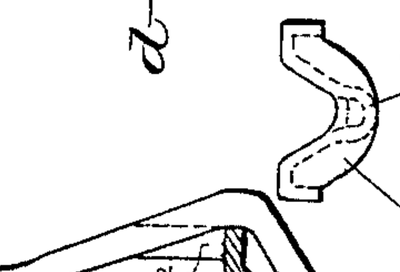
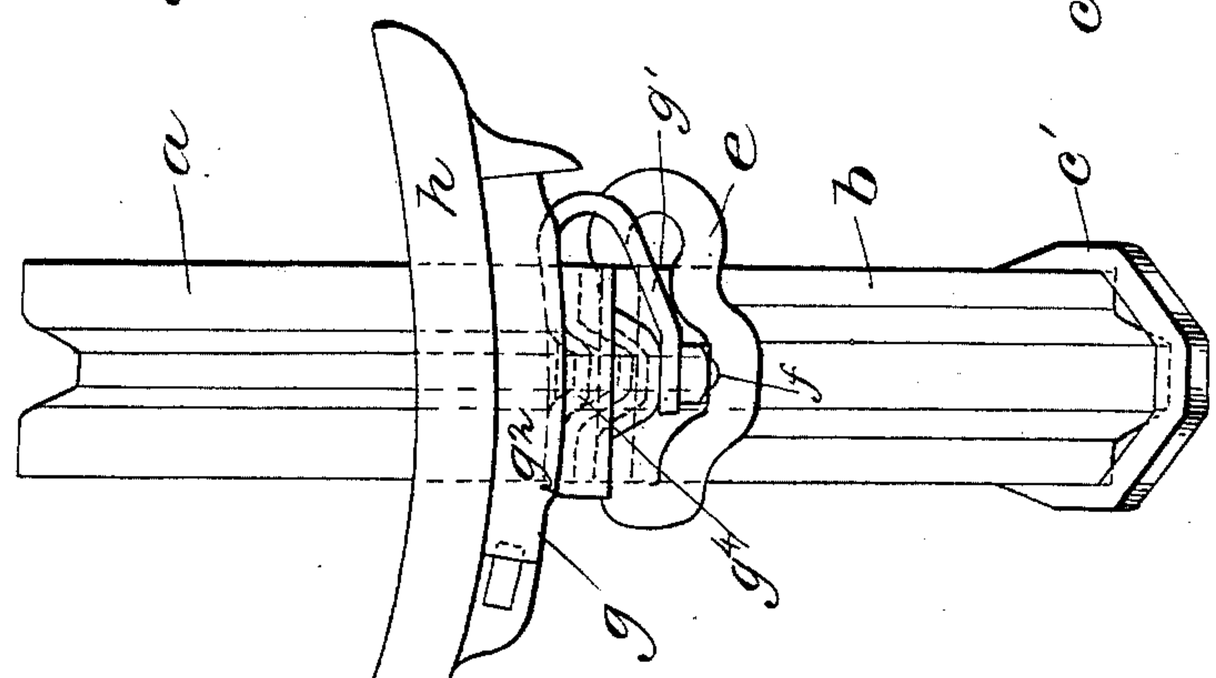


Fig. 6.

Fig. 5.



WITNESSES

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UNITED STATES PATENT OFFICE.

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BRAKE-BEAM AND SHOE-HEAD.

SPECIFICATION forming part of Letters Patent No. 450,760, dated April 21, 1891.

Application filed February 3, 1891. Serial No. 380,068. (No model.)

To all whom it may concern:

Be it known that we, CHARLES T. SCHOEN and LEWIS W. NEWTON, citizens of the United States, residing at Allegheny, in the county of Allegheny and State of Pennsylvania, have invented a certain new and useful Improvement in Pressed-Steel Brake-Beams and Shoe-Heads for Railway-Cars, of which the following is a full, clear, and exact description.

The object of our invention is to provide a truss brake-beam for use in connection with the brake-shoes of railway-cars, and also to provide a shoe-head for such and other brake-beams.

In practicing our invention we form from plate metal, preferably steel, by pressing the same into shape two corrugated or beaded bars, which in outline are of the form of obtuse angles and which are connected at their ends to form a diamond, and for convenience we will refer to the thus united bars as a "diamond truss." From a piece of properly-slitted plate metal we strike up or press into shape a wedge-shaped shoe-head having a depending tang or shank, by which it may be connected to the ends of the beam.

We will describe first the principle of our invention and the manner of constructing the same, and then particularly point out and distinctly claim the part or improvement which we claim as our invention.

In the accompanying drawings, illustrating our invention, in the several figures of which like parts are similarly designated, Figure 1 is a front elevation, and Fig. 2 a plan, of the complete invention. Fig. 3 is a longitudinal section of the meeting ends of the truss-bars on a larger scale. Fig. 4 is a transverse section. Fig. 5 is an end elevation. Fig. 6 is a vertical section taken to one side of the strut. Fig. 7 is a plan of the blank from which the shoe-head is formed. Fig. 8 is a top plan view of the shoe-head; Fig. 9, a side elevation, and Fig. 10 an end elevation, of said shoe-head. Figs. 11, 12, and 13 show in plan, side and end elevation the saddle which is interposed between the tensile bar of the beam and the strut, in order to prevent abrasion or cutting of the bar by the strut. Figs. 14, 15, and 16, respectively, show top, side, and end views of the upper end of the strut.

The letter *a* designates the tensile bar, and the letter *b* designates the compressing-bar. These bars may be of the same or different thicknesses, or weight, or stock. They are shown as of different thicknesses, the tensile bar being considerably lighter than the compression-bar. These bars, as clearly shown, more especially in Fig. 4, are concaved or corrugated or beaded or otherwise stiffened and strengthened longitudinally. We prefer to form them by pressing from flat steel plates. These bars are provided with the longitudinal ribs or corrugations and are bent into the form of obtuse angles and they are united at their ends and in the form of a diamond, as clearly shown in Fig. 2, thereby insuring strength, lightness, and ability to resist and recover from shocks. At its ends the tensile bar is lapped over the compression-bar, as clearly shown in Figs. 3 and 4. At their angles the two bars are spaced and rendered rigid by the inclusion of the strut *c*. This strut is formed by bending upon itself a strip of metal, so as to form a loop *c'* to receive the compression-bar *b*. In order to obtain stiffness and to place the strut in position to be connected with the brake-operating levers, it is twisted, and thereby the width of its ends is brought crosswise of the tensile bar, and these ends are recessed, as seen more particularly in Figs. 6 and 15, to receive the tensile bar. As it would be hazardous to have the strut rest directly upon the tensile bar, we interpose between it and the tensile bar a saddle *d*, which is also struck up of plate-steel. This saddle is provided with a projection *d'*, and we prefer also to provide the tensile bar with a corresponding projection which fits into the projection of the saddle, and thereby serves to hold the saddle in position and against lateral displacement. In order to strengthen the engagement of the strut with the compression-bar, the sides of the said strut are slitted to form tongues c^2, (see especially Figs. 2 and 6,) and these tongues are turned in so as to rest upon the inner surface of the compression-bar *b*, thus holding the compression-bar and the strut in

position very rigidly. Links *e*, of substantially the conformation shown in Fig. 5, are supplied upon the compression-bar to take the ordinary chains.

The ends of the tensile bar and the compression-bar, in addition to being united by the overlapping of the tensile bar upon the compression-bar, are further united by bolts *f*, passed transversely through them. These bolts also serve to connect the brake-shoe heads *g* to the brake-beam.

While we do not limit our invention in the beam proper to the particular kind of brake-shoe heads or brake-shoes, yet we prefer, because of their superiority in strength, durability, and lightness of weight, to employ pressed-steel brake-shoe heads, as we will proceed now to describe.

Referring to Figs. 7 to 10, we take a flat piece of plate-steel $g^{\times}$, slit it longitudinally at 2, and cut out a tongue g'. Then by proper dies the tongue g' is bent down and below the body, as shown in Figs. 9 and 10, to form the tang or shank by which the head is secured to the beam. We then turn up the sides of this blank to form the sides g^2, and turn down the end opposite the shank to form the abutment g^3. The center is depressed at g^4 to form a countersink for the reception of the bolt *f*, used to unite the head and the two bars of the beam. This bolt is passed through holes in the countersink and in the tang or shank g', which register with one another and with holes in the ends of the tensile bar and compression-bar. The shoe-head as thus finished presents through its sides g^2 and bottom g^5 a dovetailed socket to receive a corresponding dovetailed projection on the brake-shoe *h*.

Some of the advantages of our invention are that there is the same arch in the compression member as there is in the tensile member, and this results in the more uniform distribution of the strain than is possible with the constructions now common. The strain on the tensile member where it is placed in a straight line is multiplied very rapidly, while in the diamond shape it is uniformly distributed between the two and a very much stiffer beam is obtained. The diamond-form beam is better adapted for the space it is to occupy than one where the arch is all in the compression member. Inasmuch as the countersink in the shoe falls into the trough of the arched bars, it serves to prevent the endwise or longitudinal displacement of the shoe-head when it is under strain. The safety link provided is welded the same as any ordinary link, and then pressed into the form of the compression-bar, on which it is placed before putting the truss together. This link serves the usual purpose of preventing the brake-beam from falling on the track in case of breakage. It will be noticed that the holes *i i* in the strut for the reception of the lever are arranged between the two bars composing the beam.

We do not wish to be understood as limiting our invention in brake-shoe heads to the precise construction shown. It is understood that we have selected this form of brake-shoe head simply by way of illustration, and it may be modified variously to meet the standards of different roads without departing from our invention.

What we claim is—

1. A brake-beam composed of an arched tensile member and an arched compression member connected at their ends and constructed of plate metal longitudinally corrugated and provided with a transverse strut, substantially as described.

2. A diamond-form brake-beam composed of a tensile bar and a compression-bar made of metal plates longitudinally corrugated and having the general outline of an obtuse angle and united, substantially as set forth.

3. A pressed-steel brake-beam having a tensile bar and a compression-bar constructed of plates corrugated longitudinally and made as obtuse angles, united at their ends and braced transversely, substantially as described.

4. A brake-beam having a tensile bar and a compression-bar combined with a strut having one end looped to receive one of the bars and provided with tongues to bind the bar and having its other end shaped to receive the other bar, substantially as described.

5. A brake-beam containing a tensile bar and a compression-bar, combined with a strut looped about one of the bars and having its other end shaped to receive the other bar, and a saddle interposed between this end and said bar, substantially as and for the purpose described.

6. In a brake-beam, an obtuse-angled tensile bar and a similar compression-bar united at their ends by looping the former over and upon the latter, and a strut embracing one of the bars and abutting against the other bar, substantially as described.

7. A pressed-steel brake-shoe head having sides to form a socket to receive the brake-shoe, a tang or shank having in its end a bolt-hole and a countersink in the body of the head, also having a bolt-hole in alignment with the bolt-hole in the shank or tang, substantially as and for the purpose described.

In testimony whereof we have hereunto set our hands this 31st day of January, 1891.

CHAS. T. SCHOEN.
LEWIS W. NEWTON.

Witnesses:
W. H. SCHOEN, Jr.,
A. D. WILSON.