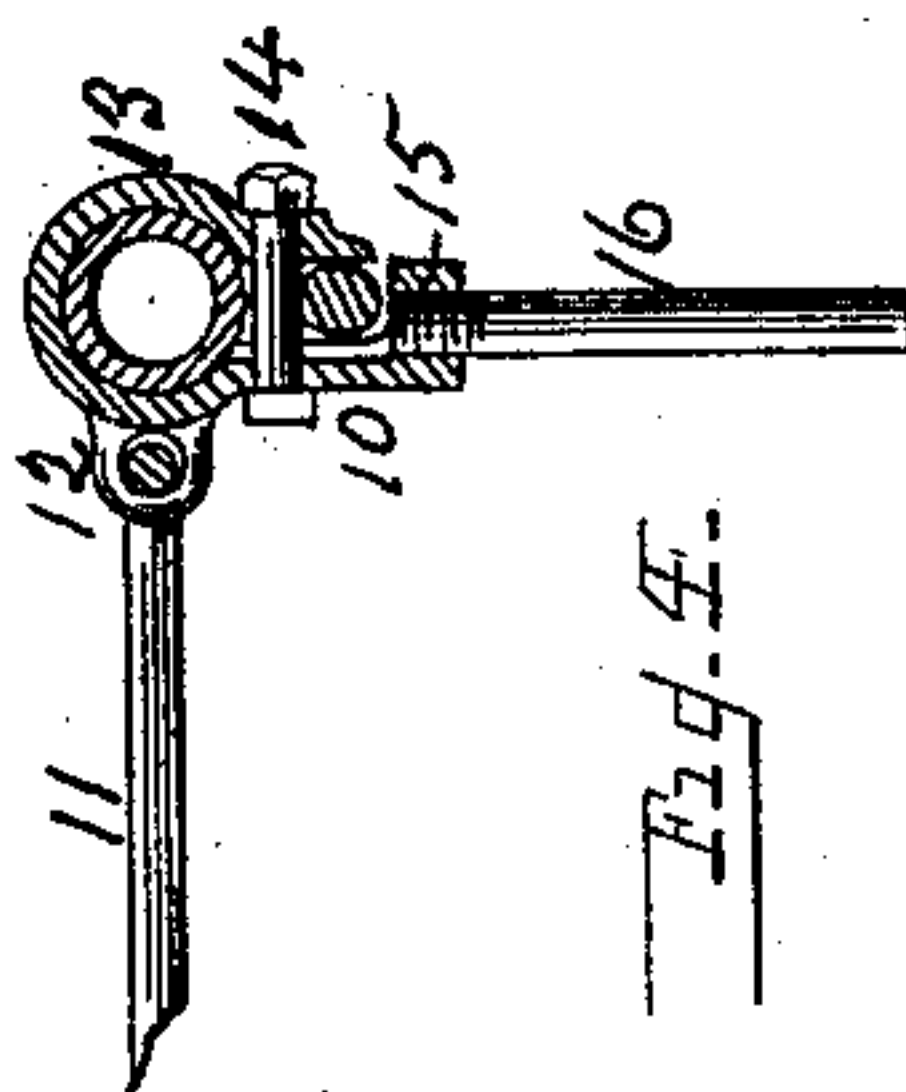


2 Sheets—Sheet 1.

# BRAKE BEAM FOR RAILWAY CARS.

Patented Apr. 12, 1887.



Inventor  
Phillip Henr.  
By his Attorney F. W. Ritter

(No Model.)

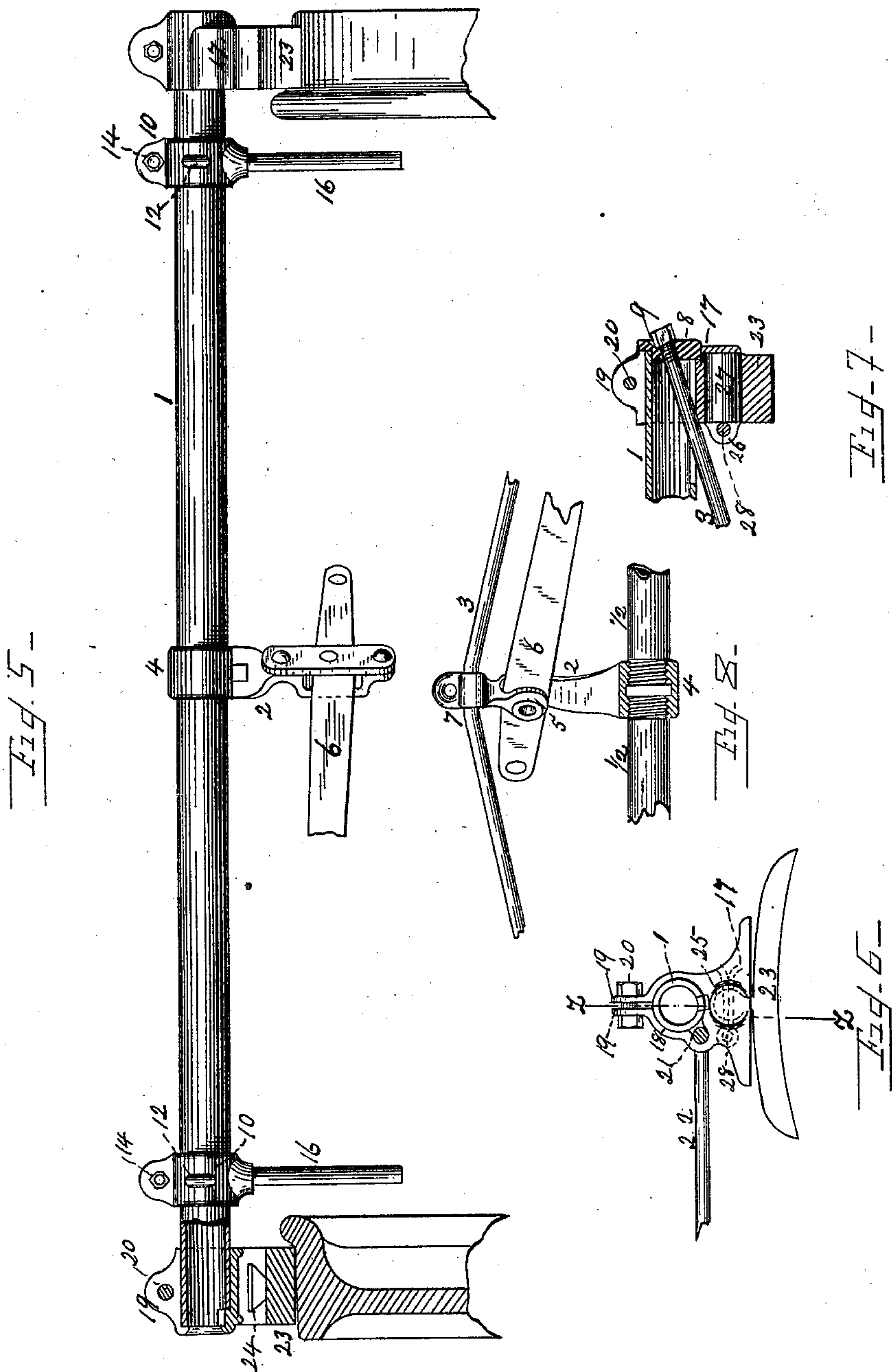
2 Sheets—Sheet 2.

P. HIEN.

BRAKE BEAM FOR RAILWAY CARS.

No. 361,009.

Patented Apr. 12, 1887.



Witnesses  
J. A. Fauberschmidt,  
Edwin S. Clarkson.

Inventor  
Phillip Hien  
By his Attorney F. W. Ritter



# UNITED STATES PATENT OFFICE.

PHILLIP HIEN, OF ROCK ISLAND, ASSIGNOR OF ONE-HALF TO HARRY C. BUHOUP, OF CHICAGO, ILLINOIS.

## BRAKE-BEAM FOR RAILWAY-CARS.

SPECIFICATION forming part of Letters Patent No. 361,009, dated April 12, 1887.

Application filed October 22, 1886. Serial No. 216,952. (No model.)

*To all whom it may concern:*

Be it known that I, PHILLIP HIEN, a citizen of the United States, residing at Rock Island, in the county of Rock Island and State of Illinois, have invented certain new and useful Improvements in Brake-Beams for Railway-Cars; and I hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, wherein—

Figure 1 is a plan view of a brake-beam embodying my invention, showing so much of the car-wheels, brake-shoes, &c., as is necessary for the purposes of illustrating the application of my devices. Fig. 2 is a section on the line *s s*, Fig. 1, looking in the direction of the arrow. Fig. 3 is a section on the line *x x*, Fig. 1, showing the strut or post and brake-lever. Fig. 4 is a section on the line *y y*, showing the safety-chain hanger in section. Fig. 5 is a modification of the brake-beam and strut. Fig. 6 is a view of a modified form of the brake-head and shoe for use with said brake-beam. Fig. 7 is a sectional view of the modified brake-head and shoe on the line *z z*, Fig. 6; and Fig. 8 is a view of the beam constructed of two lengths of pipe screwed into the strut instead of a continuous pipe-beam, as in Figs. 1 and 5.

Like figures refer to like parts wherever they occur.

My present invention relates to the construction of brake-beams for railway-cars, and has for its object to secure lightness and strength of beam, together with safety against accident incident to any breaking away or detaching of the beam from its supports.

Heretofore in the construction of brake-beams for railway-cars, where lightness as well as strength was desired, metal has been substituted for wood and the beam trussed; but in every instance, so far as I am aware, the beam itself (or the rod) has been solid. So long as the structure remains intact such construction will serve the purpose; but should the beam break loose and fall upon the track, as frequently occurs, there is great danger of a solid beam of any material, and more especially a solid metal beam, derailing the car. To avoid such danger, I employ a beam capable of being crushed or sheared by the flange of the wheel, and prefer a hollow metallic brake-

beam as the embodiment of the first feature of my invention.

There are other minor features of my invention which relate to the preferred construction of brake-heads, strut for brake-lever, safety-chain hangers, caps for connecting the truss-rod with the hollow beam, &c., all of which will hereinafter more fully appear.

I will now proceed to describe my invention more specifically, so that others skilled in the art to which it appertains may apply the same.

In the drawings, 1 indicates the brake-beam, which occupies the position of the tie-rod, and which is to be a hollow metal beam, preferably a tube or pipe of the requisite length and of such size as will bear the strain required for braking purposes. If used without being trussed, it will necessarily be larger than if trussed. I prefer to truss it as follows: When a pipe as small as two (2) inches or less diameter will be found to answer the purposes, and in case the beam is trussed, it may, if desired, be composed of two half-lengths ( $-\frac{1}{2}-\frac{1}{2}-$ ) screwed into the strut 2, as shown in Fig. 8. The hollow beam 1 may be trussed by means of the strut 2 and truss-rod 3. I prefer to form the strut 2 of wrought-iron bar, or other suitable bar, having one end bent into a circle, as at 4, and provided with bolt-holes, to form a clamp for securing the strut 2 to the hollow beam 1, its body twisting to accommodate the position of the brake-lever 6, its opposite end folded to form a fork or bracket, as at 5, with holes for the fulcrum-bolt of the brake-lever 6, and its extremity provided with an eye, as at 7, for the passage of the truss-rod 3. If, however, no truss-rods are used with the hollow beam, as in Fig. 5, the strut may be bent to form a keeper or box for the brake-lever, as shown in said figure.

The truss or tension rod 3 passes through the eye 7 of the strut, and extends from end to end of the beam 1, piercing the extremities thereof, and projecting through caps 8, which may have recesses or nut-seats 9 for the nuts on the ends of the truss-rod 3.

6 indicates the brake-lever, pivoted on the strut 2, as before specified.

10 indicates one of the hangers for the safety-chain 11. These hangers are preferably of strap form, provided with an eye, 12, for the



safety-chain 11, bent to form a loop, 13, to inclose the hollow brake-beam 1, provided with bolt and bolt-holes 14, whereby the hangers may be caused to clamp the brake tightly, and tapped, as at 15, for the reception of the guard-finger 16.

17 indicates the brake-head, which may be of malleable or malleableized metal formed with a clamp, 18, (consisting of lugs 19 and bolt 20, or their equivalents,) whereby it may be secured to the hollow beam 1, and an eye, 21, for the brake-hanger 22.

It will be noticed that the strut 2, the safety-chain hangers 10, and the brake-head 17 are each provided with a clamp for securing them to the brake-beam, which construction is adopted because thereby a firm and extended connection between the parts is obtained without weakening the hollow beam, as would be done by the forms of fastening commonly adopted.

The face of the brake-head 17, for the reception of shoe 23, may be of any suitable construction, according to the character of the shoe it is designed for. For instance, it may have the dovetailed groove 24 if a shoe having a corresponding lug is used, as illustrated in Figs. 1, 2, and 5; or, if an adjustable or rocking shoe is preferred, it may have the construction shown in Figs. 6 and 7—that is to say, a socket or knuckle, 25, with projecting lug 26 for the reception of pintle (or cylindrical lug) 27 on the back of shoe 23, and the split pin or cotter 28, which passes through lugs 26 and confines the pintle 27 within the knuckle 25. This latter form of brake-head, with its provision for a rocking or pivoted shoe, is especially adapted to compensate for any possible rotation of the tubular brake-beam when used without the truss-rod.

This brake-beam will be applied to railway cars, locomotives, and like structures where brake-beams are commonly employed, in the usual manner, and will operate in the well-known way.

Among the advantages incident to the hollow brake-beam embodying my invention, as hereinbefore set forth, are increased lightness and strength over the ordinary trussed brake-beam, and non-liability to derail the car in case the beam should fall on the track, as frequently happens.

I am aware that a trussed brake-beam has heretofore been devised wherein the brake-heads or shoe-holders were connected by metal tie-rods occupying the position of the brake-beam, and tubular truss braces were

employed therewith to prevent the inward lateral movement of the brake-heads or shoe-holders and sustain the strain in opposition to the tie-rods, and do not herein claim such a structure, as the unity and efficiency of the beam as a whole is destroyed by any derangement of either the tie-rods or the braces, whereas, in my devices, the brake-heads are carried by the tubular beam (or tubular tie) and the truss-rods are simply auxiliary to the beam, whereby the brake-beam is as little liable to disruption as the common solid wood brake-beam.

I am aware that whiffletrees and neck-yokes, for sake of lightness and strength, have been constructed of tubular rods strengthened by a brace-rod and bridge, and do not herein claim the same; nor do I broadly claim the trussing of hollow rods or beams.

Having thus set forth the nature and advantages of my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination, with a car and its brake-levers, of a hollow metallic brake-beam provided with brake-heads, substantially as and for the purposes specified.

2. The combination, in a brake-beam, of a hollow beam, a strut, end plugs or caps, 8, and a truss-rod, 3, which extends through the caps 8 and is provided with nuts, substantially as and for the purposes specified.

3. The combination, with a trussed hollow brake-beam, of a strut having a fork adapted to receive the brake-lever, and a clamp end for grasping the brake-beam, substantially as and for the purposes specified.

4. The combination, with the hollow brake-beam, of a clamp-hanger having an eye for the safety-chain and tapped for the reception of the guard-finger, substantially as and for the purposes specified.

5. The combination, with the hollow brake-beam, of a brake-head having a clamp for grasping the beam, substantially as and for the purposes specified.

6. The combination, with the hollow brake-beam, of a brake-head having a clamp for securing it to the brake-beam, and a pivoted or rocking brake-shoe, substantially as and for the purposes specified.

In testimony whereof I affix my signature, in presence of two witnesses, this 16th day of October, 1886.

PHILLIP HIEN.

Witnesses:

SAMUEL D. KING,  
J. D. WILBER.