Sept. 14, 1943. E. G. BUSSE ET AL 2,329,247

RAILWAY BRAKE BEAM

Filed Nov. 1, 1941 2 Sheets-Sheet 1

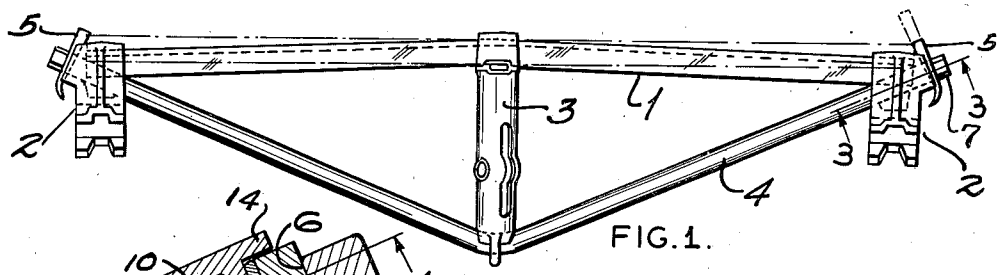


FIG. 1.

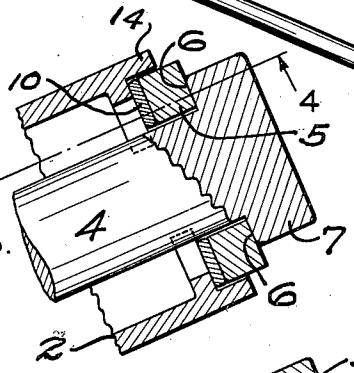


FIG. 3.

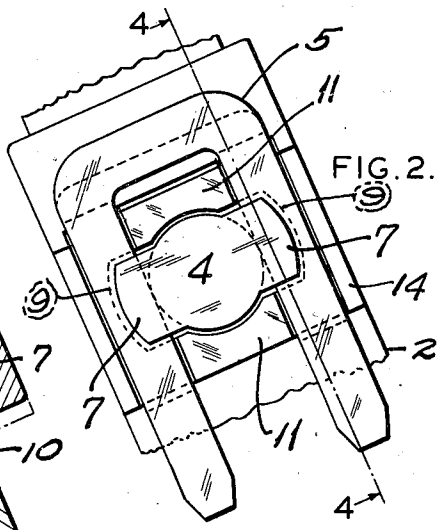


FIG. 2.

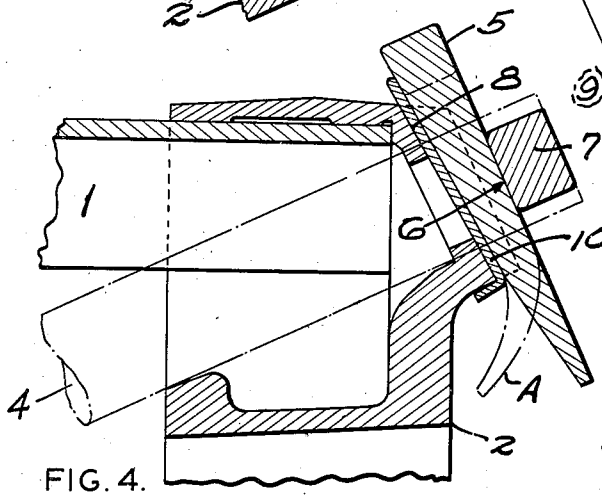


FIG. 4.

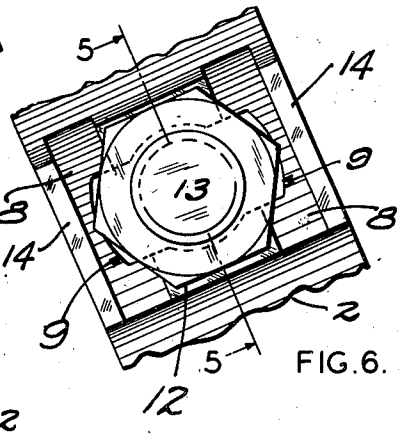


FIG. 6.

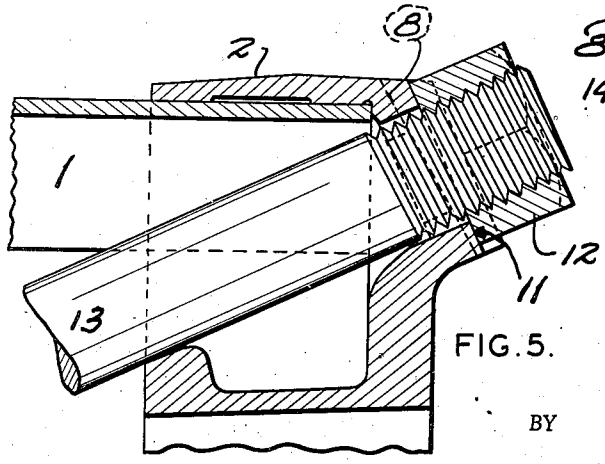


FIG. 5.

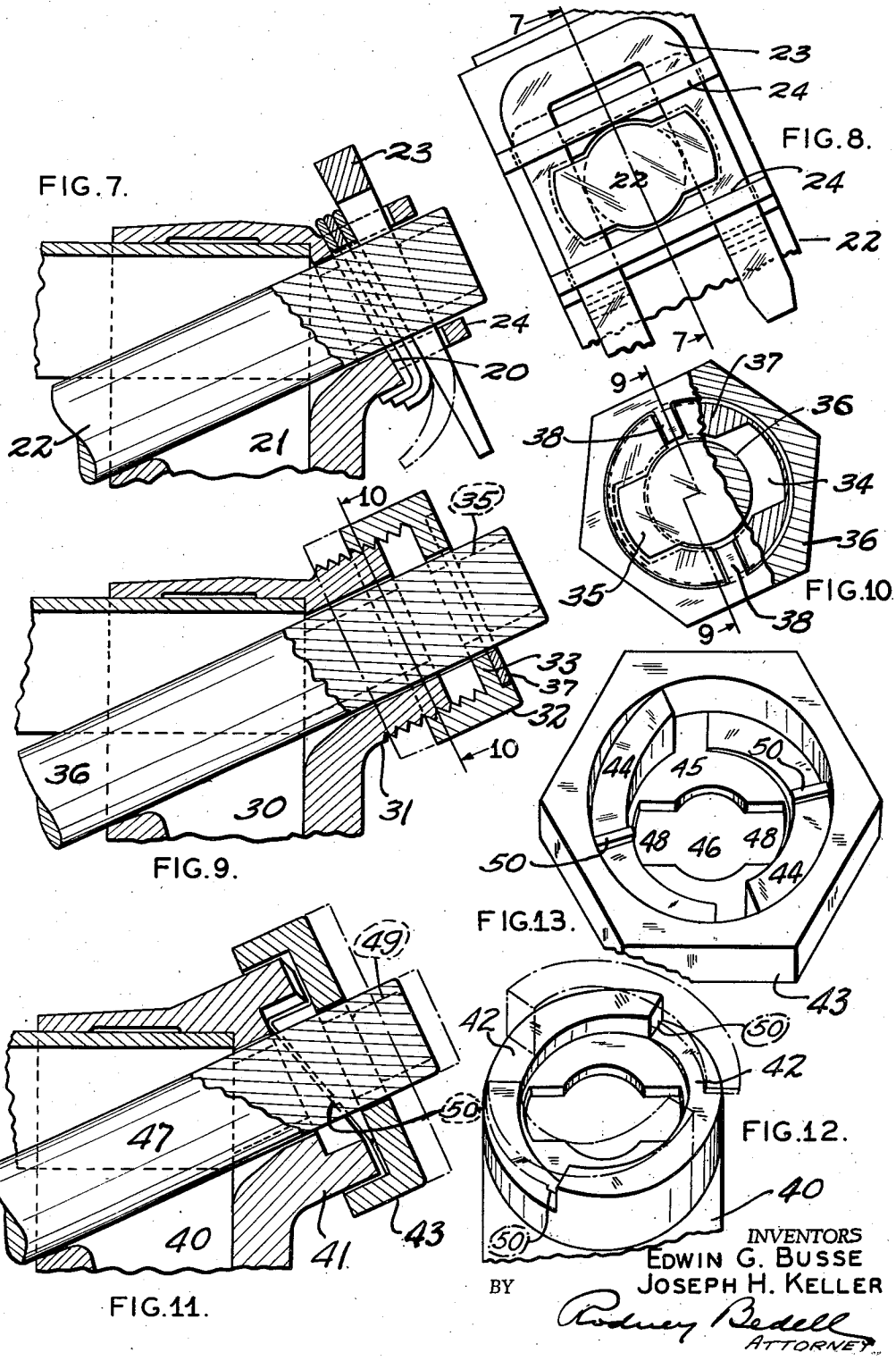
BY

INVENTORS
EDWIN G. BUSSE
JOSEPH H. KELLER
Rodney Bedell
ATTORNEY

Sept. 14, 1943. E. G. BUSSE ET AL 2,329,247

RAILWAY BRAKE BEAM

Filed Nov. 1, 1941 2 Sheets-Sheet 2



INVENTORS
EDWIN G. BUSSE
JOSEPH H. KELLER

BY Rodney Bedell
ATTORNEY

Patented Sept. 14, 1943 2,329,247

UNITED STATES PATENT OFFICE

2,329,247

RAILWAY BRAKE BEAM

Edwin G. Busse and Joseph H. Keller, Chicago, Ill., assignors to Chicago Railway Equipment Company, Chicago, Ill., a corporation of Illinois

Application November 1, 1941, Serial No. 417,452

14 Claims. (Cl. 188—222)

The invention relates to railway brake beams and more particularly to the anchorage of the ends of the tension member of a truss type brake beam.

Manufacturers and users of brake beams are giving increased attention to the problem of breakage of the end portions of such tension members due to the strains resulting from the application and release of the brakes which are accentuated by the reduction of the cross sectional area of the end portion of the tension member by the customary threading of the same to take a nut seated on the brake head whereby the tension on the rod is controlled and the beam parts are held in assembled relation.

It has been proposed to upset the end portions of the tension rods to increase their diameter and thus offset reduction of area otherwise effected by the threading, but this is expensive construction and only increases the life of rod a small extent. The cutting in of threads allows fatigue to concentrate at the base of the thread at the inner face of the nut, and fracture at this point is common.

Various other arrangements avoiding reduction in cross sectional area of the tension member have been based upon riveting or otherwise fixedly securing the ends of the tension member to the ends of the compression member, but these constructions are subject to the condition that there is no provision for adjusting the connection to control the camber of the compression member and the spacing of the brake heads from the lever fulcrum in the beam strut, as is effected readily by a nut threaded on the end of the tension member and seated against the brake head.

The main object of the present invention is to adjustably secure the ends of the tension member of the beam to the associated beam members without reduction in the cross sectional area of the tension member.

An additional object is to embody the above feature in a beam in which the usual round tension rod with a nut threaded on its end may be substituted if desired; in other words, to adapt the beam brake head and compression member for use with either type of tension rod.

These and other incidental objects as will appear from the following specification are attained by the structure illustrated in the accompanying drawings in which—

Figure 1 is a plan view of a truss type brake beam embodying one form of the invention.

Figure 2 is an end view of the beam shown in Figure 1 but drawn to enlarged scale.

Figure 3 is a detailed longitudinal section taken on the line 3—3 of Figure 1.

Figure 4 is a detailed longitudinal section taken on the lines 4—4 of Figures 2 and 3.

Figure 5 corresponds to Figure 4 but shows the substitution of the usual tension rod and nut in place of the tension rod shown in Figures 1–4.

Figure 6 is an end view of the assembly shown in Figure 5. In Figures 4 and 6 some of the parts behind the plane of the view are shown in broken lines for the purpose of more clearly illustrating the construction.

Figures 7, 9 and 11 correspond to Figure 4 but illustrate respectively different forms of the invention, Figures 7 and 9 being taken on the corresponding section lines of Figures 8 and 10.

Figure 8 is an end view of the structure shown in Figure 7.

Figure 10 is in part an end view of the structure shown in Figure 9 and in part a transverse section taken on the line 10—10 of Figure 9.

Figure 12 is an isometric view of the portion of the brake head forming a seat for the tensioning device, broken lines indicating portions of the tensioning device.

Figure 13 is an isometric view of the portion of the tensioning device which engages the brake head seat.

The brake beam illustrated in Figures 1–4 includes the usual compression member 1, preferably of channel or U cross section, with brake heads 2 mounted upon its ends and with a strut 3 having one end seated against the intermediate portion of the compression member and its other end seated against the intermediate portion of the tension member 4, the end portions of which extend through brake heads 2.

A wedge 5 of U or horseshoe shape is inserted between the outer face of head 2 and opposing shoulders 6 provided on the end of rod 4 by lugs 7 which project laterally of the rod beyond the sides of the rod.

The outer face or side wall of the head has spaced parallel inclined seats 8 for wedge 5 and these seats are recessed at 9 to accommodate the passage therethrough of the tension rod lugs 7 when the end portion of the rod is inserted through the brake head. The elongated legs of the wedge bridge the recesses 9 and have sufficient bearing area at opposite sides of the recesses to provide adequate support for the wedge. If desired, one or more washers 10 may be placed between wedge 5 and its seats 8 to increase the range of adjustment of the tension rod, but ordinarily the taper of the wedge legs will be suffi-

cient to tighten the brake heads against the ends of the compression member and to camber the latter from the broken line position shown in Figure 1 to the solid line position which indicates the contour of the compression member when the beam is placed in service. Upon desired adjustment being effected, the ends of the wedge legs may be bent over as indicated at A to prevent retraction of the wedge.

Between seats 8, which are inclined to a perpendicular to the axis of the tension member 4 and its passageway through the brake head, the outer face or wall of the brake head is provided with seats 11 perpendicular to the above-mentioned axis and adapted to form a bearing for a nut 12 threaded on the end of a tension rod 13 as indicated in Figure 5. Seats 11 are raised above the level of seats 8 but do not affect the functioning of seats 8 and wedge 5 since the legs of the wedge straddle seats 11.

Preferably the brake head has ribs 14 extending along the outside of the legs of wedges 5 and preventing the latter from spreading and thereby releasing the lugs 7 of the tension member.

The wedge structure forms a simple, effective means for tightening the tension member and other parts in assembled position, and the normal cross sectional area of the tension member is not reduced near its end as is the case with the threaded tension rod. At the same time, a beam made as shown in Figures 1–4 may have an ordinary threaded tension rod and nut substituted for the head tension member and wedge. Hence the parts other than the tension rod and wedge are interchangeable with the ordinary form of brake beam heads of which many hundreds of thousands are in use on American railroads.

Figures 7 and 8 illustrate another form of the invention in which the entire outer face 20 of the portion of the brake head 21 which surrounds the tension member 22 forms an inclined seat for the wedge 23 and the head is provided with apertured webs 24 which enclose the wedge legs. With this arrangement the brake head is not interchangeable with that of an ordinary brake beam having a threaded rod tension member.

Figures 9 and 10 illustrate a form of the invention in which the outer portion of the brake head 30 includes a cylindrical boss 31 threaded exteriorly to receive a nut 32 threaded interiorly and having its end wall 33 recessed at 34 to accommodate the passage through the nut of the lateral lugs 35 on the tension member 36. A split washer 37 is inserted in the nut after the rod has been passed therethrough and engages the shoulders on lugs 35 which oppose the brake head. After the assembly, the nut is threaded outwardly on the brake head boss until the desired tightening movement has been effected. Preferably the nut has ribs 38 to engage the ends of the segments of the split washers 37 to prevent its rotation relative to the nut.

In this form of the invention the cooperating threads on the boss and nut provide a rotary wedge action similar to the usual threaded tension rod arrangement, but the structure avoids the cutting of threads in the tension rod and the undesirable reduction of its cross section area at a point where the transverse forces are most severe.

Figures 11–13 illustrate another form of the invention in which the brake head 40 has a cylindrical boss 41 similar to the boss 31 of the head shown in Figure 9, but instead of the outer side face of this boss being threaded, as in Figure 9, its end face forms arcuate cams 42 on which is seated the tensioning nut 43 having cams 44 opposing cams 42. Nut 43 has an end wall 45 apertured at 46 for the tension member 47, the opening in the end wall being recessed at 48 to accommodate the tension rod lugs 49 projecting laterally from the sides of the rod.

Preferably the tension device has lips 50 midway of its cams 44 which will drop over the high spots of the cams 42 to prevent the reverse movement of the nut after it has been turned to the desired position.

In making the approximate quarter turn necessary to properly camber or tension the brake beam, the face of each lip 50, and possibly the tail of the corresponding cam 44, would ride on the opposing cam 42 until the lips had passed over the high spot of cams 42, at which time the cams 42 and 44 would contact each other throughout their length. The spring inherent in the beam would accommodate the surplus camber produced temporarily by the riding of lips 50 over head cams 42. The heavy-proof loading, constituting the last operation in assembling the brake beam, would have a tendency to set all of the parts.

Each form of the invention illustrated embodies the general objectives set forth in the introductory portion of the specification and those familiar with the art will have little difficulty in varying the essential features of the invention otherwise than as disclosed. The exclusive use of such modifications as come within the scope of the claims is contemplated.

What is claimed is:

1. In a railway brake beam, a compression member, a brake head at the end thereof, a tension member extending through said brake head and having a lateral shoulder on its end portion and projecting beyond the normal side face of the tension member and spaced from said brake head, and a tensioning device between said shoulder and the opposing face of the brake head, the device and the head having respective integral elements opposing each other transversely of the tension member to hold the device against relative movement over the face of the tension member.

2. A brake beam as described in claim 1 in which the tensioning device comprises a wedge member supported by a bearing on the outer face of the head, the bearing being inclined to the axis of the tension member.

3. A brake beam as described in claim 1 in which the shoulder on the tension member is substantially less than a complete annulus and the opposing face of the brake head has a similarly shaped opening providing for the passage of the tension rod shoulder through the head.

4. In a railway brake beam, a compression member, a brake head at the end thereof, a tension member extending through said brake head, elements on said head extending beyond the end of said compression member and alongside said tension member, a shoulder projecting from the side of said tension member, and a wedge device inserted through said elements transversely of said tension member and engaging said shoulder to tighten the tension member.

5. In a railway brake beam, a compression member, a brake head at the end thereof and having a threaded boss projecting outwardly towards the end of the beam, a tension member extending through said brake head and having a

shoulder projecting laterally from the side of the tension member and opposing and spaced from the brake head, and a nut threaded onto said boss and seated on said shoulder for tightening said tension member.

6. A brake beam as described in claim 5 which includes a separate bearing element between the nut and the lateral projection on the tension member and held against rotation relative to the nut.

7. A railway brake beam head having a through passageway for receiving and closely surrounding a beam tension member and having a pocket for receiving the end of a beam compression member, there being a bearing on the outer wall of said head at the side of said passageway and inclined to the perpendicular to the axis of the tension member passageway for mounting a rod-engaging wedge-like tension device whereby the tension on the tension member may be varied by movement of the tension device over the inclined bearing, said bearing being elongated in one direction to accommodate movement of the tensioning device across the bearing in said direction and the bearing being recessed in the head wall to retain the tensioning device against movement across the bearing in a transverse direction.

8. A railway brake beam head having a side wall and a pocket opening in one direction from said wall for receiving the end of a compression member, and having elements extending outwardly from said wall in the opposite direction and spaced apart to receive a tension member between them and apertured transversely of their spacing to receive and seat a wedge for engaging and tensioning a tension member.

9. A railway brake beam head having a pocket opening in one direction for receiving the end of a beam compression member and having a boss projecting in the opposite direction, said head and boss being provided with a passageway for a beam tension member and said boss being threaded exteriorly for the application of a nut with its axis in substantial alignment with said passageway.

10. In a railway brake beam, a compression member, a brake head at the end thereof, a tension member extending through said brake head and having shoulders on its end portion facing toward said brake head, an annular bearing on said brake head surrounding said tension member and comprising surfaces inclined to the perpendicular to the tension member at diametrically opposite sides of the tension member and facing said shoulders, a nut-like tensioning device with its outer face seated on said shoulders and with its inner face forming cam surfaces complementary to and seated on said bearing cam surfaces.

11. A railway brake head having a pocket for receiving the end of a compression member of a truss type brake beam and including an end wall against which the end of said member may seat, there being an opening in said wall for receiving a beam tension member passing therethrough, the sides of the opening being disposed to hold the tension member against movement in the head transversely of the axis of the opening, the outer face of said wall having portions at diametrically opposite sides of said opening disposed in a plane perpendicular to the axis of said opening and adapted to seat a nut which may be threaded onto a tension member extending through the opening, said wall outer face also having portions at diametrically opposite sides of said opening intermediate said first-mentioned portions and inclined to said plane and adapted to seat a wedge member which may engage an opposing shoulder on a tensioning member extending through the opening.

12. A railway brake head having a pocket for receiving the end of a compression member of a truss type brake beam and including an end wall against which the end of said member may seat, there being an opening in said wall for receiving a beam tension member passing therethrough, the outer face of said wall comprising an annular bearing having portions at diametrically opposite sides of said opening inclined to a plane extending perpendicularly to said axis.

13. A railway brake head having a pocket for receiving the end of a compression member of a truss type break beam and including an end wall against which the end of said member may seat, there being an opening in said wall for receiving a beam tension member projecting through the head, the sides of the opening being disposed to hold the tension member against movement in the head transversely of the axis of the opening, said wall having portions inclined to the axis of said opening and disposed to seat a device and thrust the device away from said pocket as the device is moved over said portions and thereby tighten the tension member.

14. In a railway truss type brake beam, a compression member, a tension member projecting beyond the end of the compression member, a brake head seated against the end of the compression member and having an opening receiving the projecting portion of the tension member, the sides of the opening holding the tension member against movement transversely of the axis of the opening, there being a bearing surface on said head at the side of said opening and inclined from a perpendicular to the axis of the tension member, and a tensioning device seated on said bearing surface, the tension member having a bearing surface opposing and inclined to said head bearing surface and engaged by said device whereby the tension on the tension member may be varied by moving said device over said bearing surfaces.

EDWIN G. BUSSE.
JOSEPH H. KELLER.