March 7, 1944. L. KADAR 2,343,673

BRAKE BEAM STRUCTURE

Filed Sept. 21, 1942 2 Sheets-Sheet 1

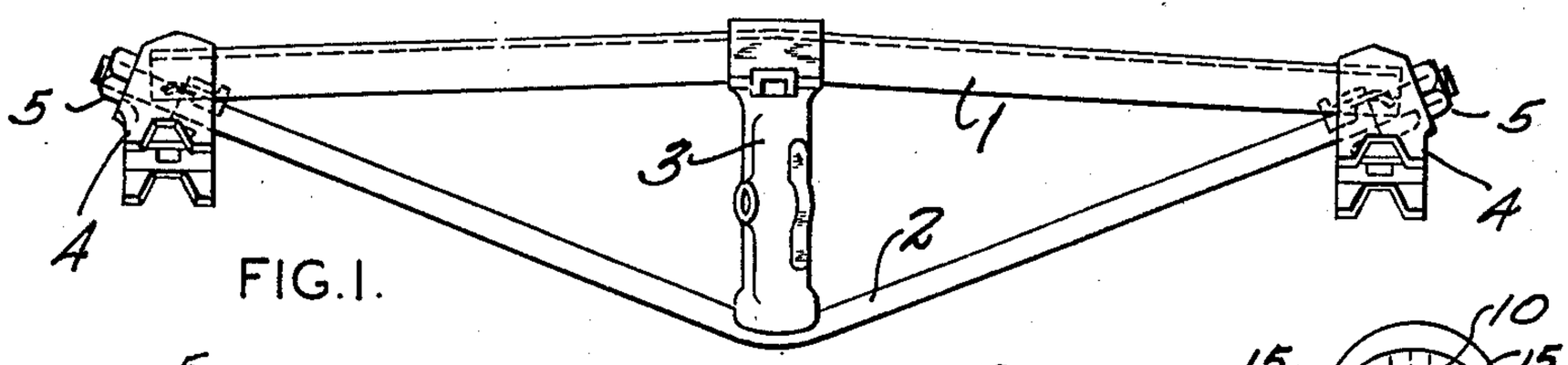

FIG. 1.

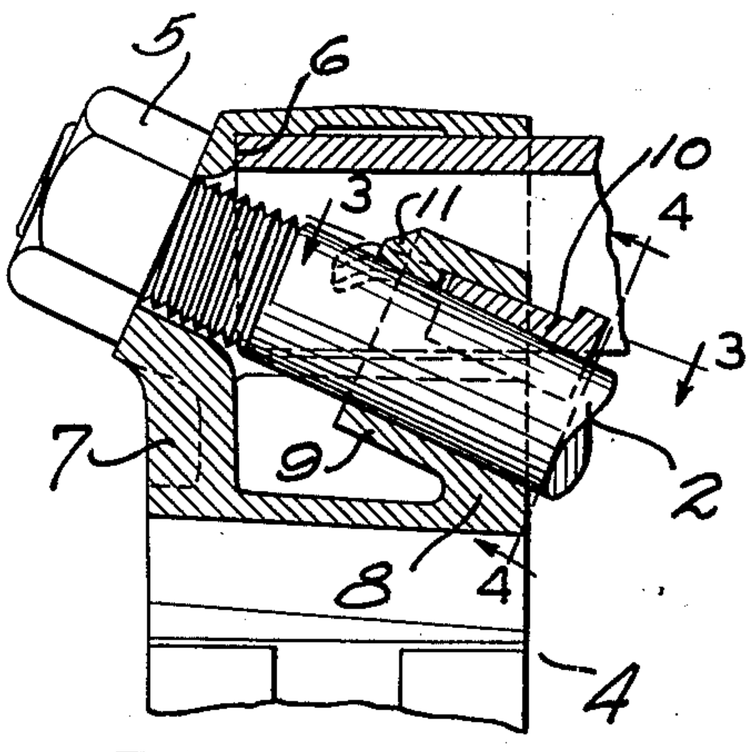

FIG. 2.

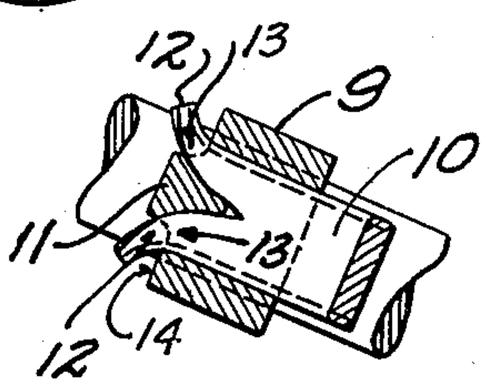

FIG. 3.

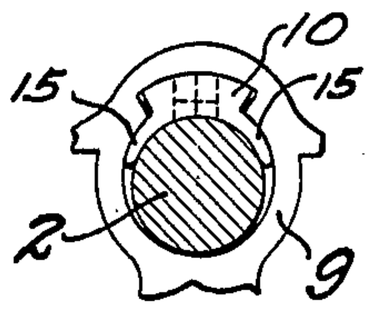

FIG. 4.

FIG. 5.

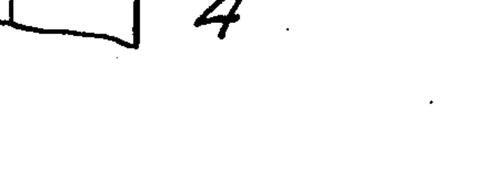

FIG. 6.

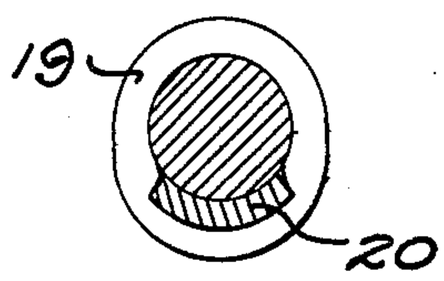

FIG. 7.

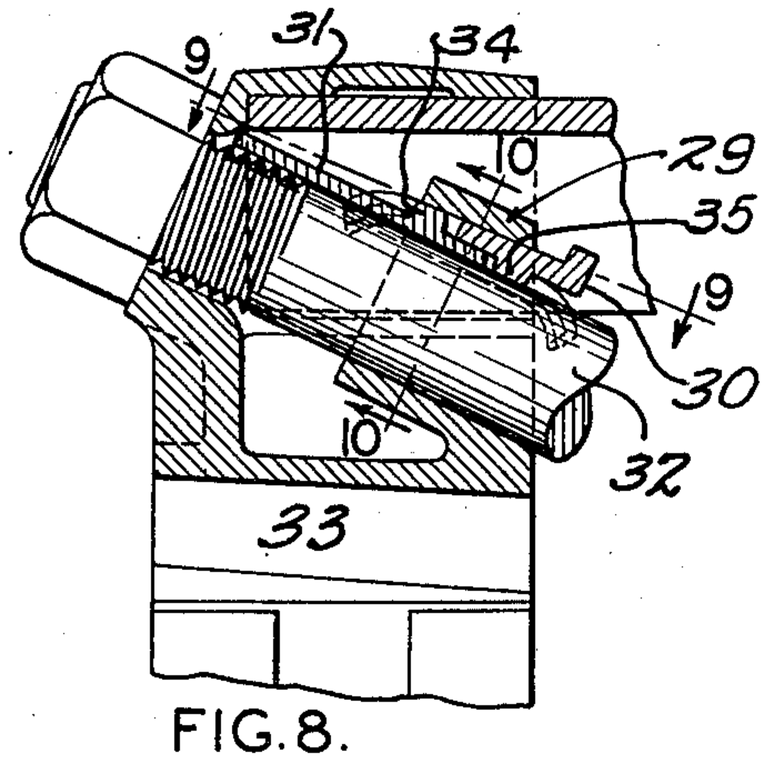

FIG. 8.

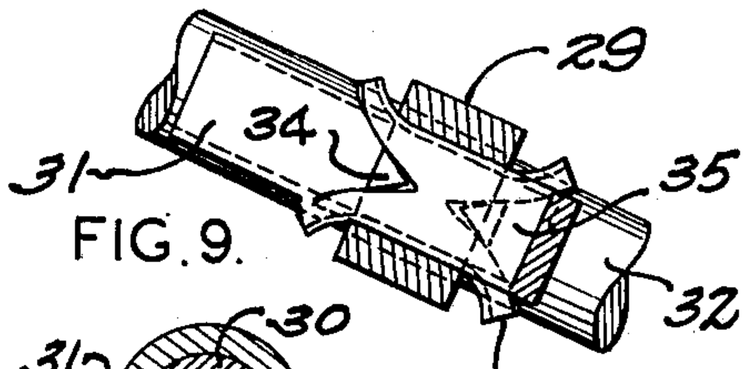

FIG. 9.

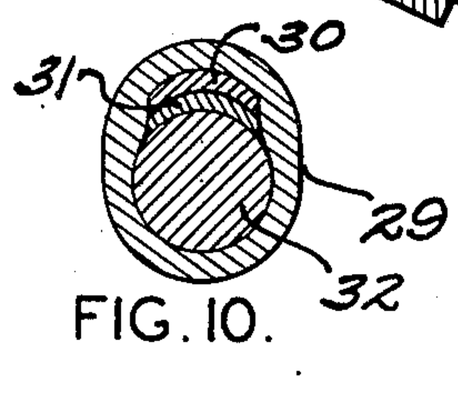

FIG. 10.

INVENTOR:
LOUIS KADAR

BY Rodney Bedell
ATTORNEY

March 7, 1944. L. KADAR 2,343,673

BRAKE BEAM STRUCTURE

Filed Sept. 21, 1942 2 Sheets-Sheet 2

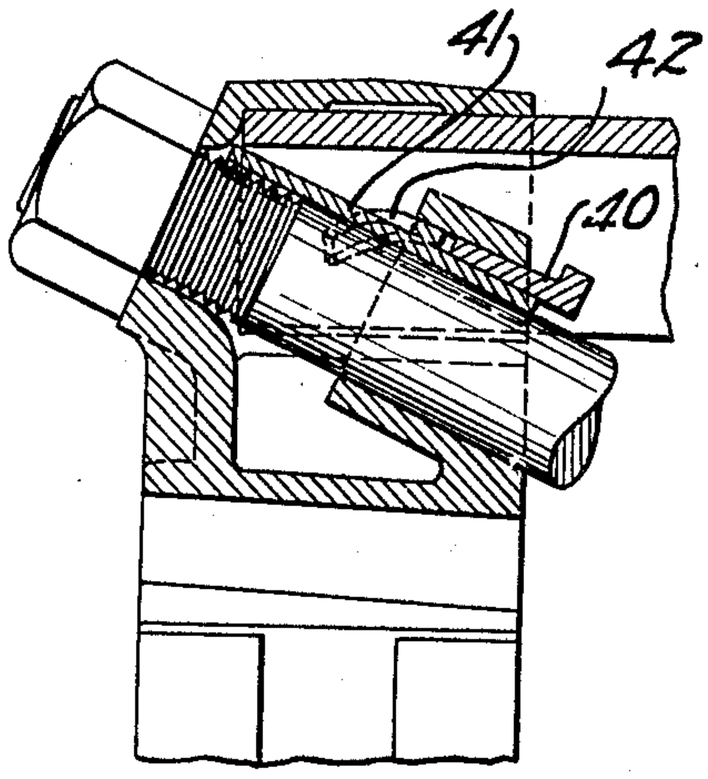

FIG. 11.

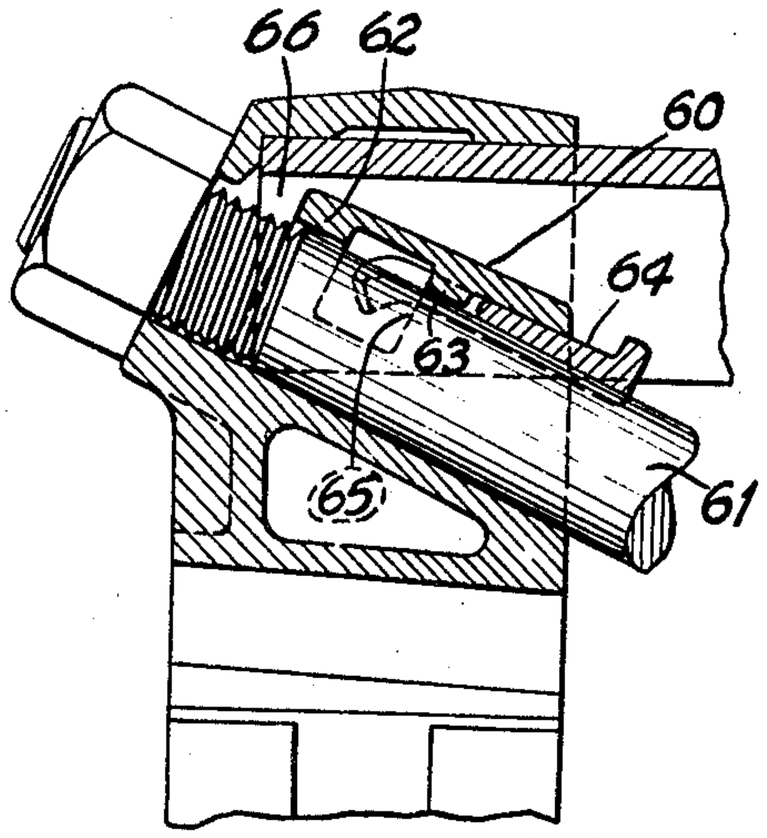

FIG. 13.

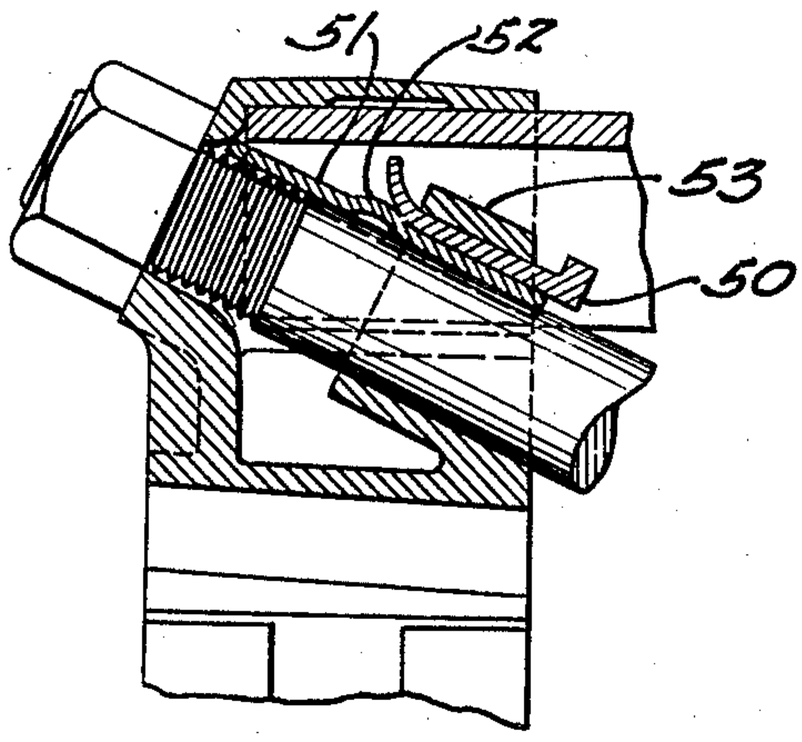

FIG. 12.

INVENTOR;
LOUIS KADAR

BY Rodney Bedell
ATTORNEY

Patented Mar. 7, 1944 2,343,673

UNITED STATES PATENT OFFICE

2,343,673

BRAKE BEAM STRUCTURE

Louis Kadar, Chicago, Ill., assignor to Chicago Railway Equipment Company, Chicago, Ill., a corporation of Illinois

Application September 21, 1942, Serial No. 459,105

16 Claims. (Cl. 188—219)

The invention relates to the construction of brake beams as used on railway rolling stock, and more particularly to the assembly of the brake head, tension member and compression member of a truss-type brake beam.

The main object of the invention is to hold the tension member and the head against relative play transversely of the length of the tension member and thereby avoid likelihood of failure of the tension member adjacent to the head due to repeated bending back and forth at this point.

This general object corresponds to that of the structures disclosed in E. G. Busse Patent 2,094,034, H. W. Ekholm Patent 2,094,035, and patents to the present applicant, Nos. 2,094,036 and 2,094,037, all issued September 28, 1937, C. W. Osner & H. W. Ekholm Patent 2,182,210, issued December 5, 1939, E. G. Busse Patent 2,270,262, issued January 20, 1942, and copending application of E. G. Busse, Serial No. 272,927, filed May 10, 1939, and issued as Patent No. 2,319,440 on May 18, 1943. In the Osner & Ekholm patent and in the E. G. Busse application, the structure for holding the tension member and brake head against relative movement includes a key or wedge part, the forward end of which may be distorted, as the part is driven into functioning position, to cooperate with other elements to resist withdrawal of the key. A specific object of the present invention is to facilitate this key distorting feature of the structure and to avoid difficulty in the manufacture of the head.

These objects and other detail objects as will appear below are attained by the structure illustrated in the accompanying drawings, in which—

Figure 1 is a top view of a truss-type brake beam.

Figure 2 is a detail horizontal section taken through an end portion of the beam and drawn to an enlarged scale.

Figures 3 and 4 are detail views taken on the corresponding section lines of Figure 2.

Figures 5, 8, 11, 12 and 13 correspond to Figure 2 but each illustrates another form of the invention.

Figures 6 and 7 are detail views taken on the corresponding section lines of Figure 5.

Figures 9 and 10 are detail views taken on the corresponding section lines of Figure 8.

The beam illustrated in Figure 1 includes the usual compression member 1 of channel section, round rod tension member 2, strut 3, heads 4 and nuts 5 threaded on the end portions of tension member 2 which pass through heads 4, the nuts being seated against the outer faces of heads 4. Each head 4 is recessed to receive the end portion of the compression member, the end of the latter being seated against the inner face 6 of the outer wall 7 of the head. The head inner wall 8 includes an inwardly extending ring-like or sleeve-like part 9 with its inner end spaced a substantial distance from the head outer wall 7, the ring-like part surrounding the tension member and enlarged or recessed at one side so that a key 10 of arcuate cross section may be inserted between the opposing faces of the tension member and ring-like part to tightly engage these parts with each other and prevent their relative movement transversely of the axis of the tension member. Preferably the key is of wedge shape longitudinally of its length to insure a tight fit between the parts when the key is driven home.

Projecting inwardly from the inner end of part 9 is a lug 11 having a pointed or wedge-like side facing the forward end of key 10 as the latter is inserted and serving to distort the forward end of the key so as to spread elements 12 on the latter and position them at the rear of the inner end of the ring-like part and thereby resist withdrawal of the key, thus insuring maintenance of a tight joint between the ring-like part and the portion of the tension member received by it. If the fit between parts 2 and 9 should be loosened at any time, as by corrosion or elongation of the tension member, the tight assembly may be readily restored by a hammer blow on the outer end of the key. In the event it is desired to disassemble the beam, the key may be forcibly pulled out of the ring-like part, but the distorted elements 12 will be adequate to maintain the key against accidental removal such as might otherwise result from corrosion or elongation, as mentioned above, or from constant jarring of the beam in the operation of the truck in which it is mounted.

Preferably, but not necessarily, the forward edge of the key will be bifurcated before insertion into the ring-like part and the bifurcation will receive the pointed edge of lug 11. Preferably, but not necessarily, lug 11 is offset partially longitudinally of the axis of the parts so that the passages 13 in part 9 are beyond the surfaces 14 which restrain the withdrawal of the key and facilitate the distortion of the bifurcations.

It will be noted that the normal internal diameter of ring-like part 9 is substantially greater than the diameter of tension member 2 and that the side portions 15 of key 10 filling in the gap between the opposing faces of parts 2 and 9 extend a substantial distance around the periph-

ery of the tension member. Hence the head may be used with a tension member of larger diameter than that shown, only the thinner portion of the key being inserted between the opposing faces of the tension member and the ring-like part. Or, if a larger tension member is used, a narrower key lacking the depending sides may be used.

Such an arrangement is shown in Figures 5–7, similar to that previously described, but the ring-like part 19 is substantially filled by the tension member. The structure differs in that the recess for receiving the key 20 is at the side of the part nearest the face of the head and the narrower key does not extend so far around the tension member and the key splitting or spreading lug 21 does not project longitudinally of the ring-like part beyond the end of the latter. This arrangement somewhat simplifies the head casting and provides greater clearance between the rear face 22 of the ring-like part and the opposing face 23 of the compression member 24.

Figures 8–10 illustrate another form of the invention in which the ring-like part 29 is simplified by omitting therefrom the wedge-engaging lug previously described and the splitting and spreading of the inner end of key 30 is effected by a separate distorting element or supplementary key 31 comprising a strip of arcuate cross section inserted between the opposing faces of the ring-like part 29 and the tension member part 32, the forward end of element 31 being seated against the inner face of the outer wall of the head 33. Key 30 fits over element 31 and the latter is provided with a radial lug 34 for splitting or spreading the inner end of the key as do elements 11 and 21 previously described.

Preferably, but not necessarily, key 30 includes a lug 35 on its inner face disposed to split or spread the bifurcated rear end of element 31 so that the bifurcations 36 are distorted to engage the outer end of ring-like part 29. Hence, when the key is driven home, the bifurcations engage opposite ends of part 29 and the assembly is maintained tight irrespective of continued seating of the inner end of element 31 against the inner face of the brake head wall.

The splitting and spreading of the rear end of the key spreading element is not essential, however, and Figure 11 illustrates another form of the invention in which the key 40 is slidable over the supplementary key or spreading element 41, but only the bifurcated inner ends 42 of key 40 are split and spread. Otherwise the structure corresponds to that shown in Figures 8–10.

Figure 12 shows another form of the invention utilizing a separate distorting element or inner key but, instead of spreading bifurcated inner ends of the wedging key 50, the inner key 51 is provided with a hump 52 which distorts the inner end key 50 upwardly behind the inner end of the ring-like part 53, thus locking key 50 in place in a manner somewhat similar to the locking of the key in Figure 5 of the above-mentioned Osner & Ekholm patent but without requiring an extension of the ring-like part surrounding the tension member and the difficult coring and cleaning of the latter to form a key receiving slot.

Figure 13 shows another form of the invention embodying a relatively long sleeve-like member 60 for receiving the beam tension rod 61 and extending from one side of the brake head to the other except for an aperture or recess 66 adjacent the seat for the end of the web of the channel compression member. The inner periphery of the sleeve is provided with a slot with its outer end adjacent the side of the sleeve open to receive the key and with its inner end closed as indicated at 62. A projection 63 extends into the slot between its ends and serves to spread the bifurcated inner end of the wedge 64 inserted in the slot. Shoulders or lugs 65 at the sides of projection 63 are engaged by the bifurcated portions of the key to prevent withdrawal of the key from the sleeve.

It will be understood that in all forms of the invention wedging action may be obtained in whole or in part by inclining the rod opposing face of the key slot, in which case the key need not necessarily be wedge-shaped.

As is well known in the art, tolerances are allowed in the rolling of round rods such as are used for the brake beam tension member, and these tolerances result in undersized and oversized and out-of-round rods. Hence it is not possible to insure a tight fit between rod and sleeve alone. The present invention not only provides for a tight fit at the time of the initial assembly, but provides for the maintenance of such a tight fit throughout the life of the beam and also provides for the use of a single form of brake head for different sized rods such as the 1¼" and 1⅜" diameter rods now in general use. This avoids the necessity of a railroad carrying heads with two sizes of sleeves at each point of supply.

In some of the art previously referred to, distortion of the inner end of the key is effected by the provision of a transverse slot in the sleeve, but attempts to form this opening have resulted in high core losses and misshaped castings which had to be discarded. The present structure overcomes these difficulties.

Those skilled in the art will recognize the utility of the above-described invention and may vary the details without departing from the spirit of the invention, and the exclusive use of other modifications coming within the scope of the claims is contemplated.

What is claimed is:

1. In a brake beam having a compression member, a brake head member seated thereon, a tension member extending through said head member, and a device seated against the outer face of the outer side of the head member and engaging the end portion of the tension member to hold the members assembled, the head member having a sleeve-like part extending inwardly from its inner side and substantially surrounding a part of the tension member spaced from the holding device, the inner end of the sleeve-like part terminating at a point spaced from the outer side of the brake head member, a wedge-like key inserted between the opposing faces of said parts, and means for splitting the inner end of the key and spreading its split portions laterally and about the tension member to resist withdrawal of the key.

2. Structure as described in claim 1 in which the key splitting means comprises a separately formed element extending alongside of the tension member from the inner face of the outer side of the head member towards the inner end of the key and the sleeve-like part.

3. Structure as described in claim 1 in which the key splitting means comprises a separately formed element inserted between opposing faces of the key and one of the key-engaging parts and extending to the inner face of the outer side of the head member and provided with a projection lying in the path of the inner end of the key.

4. In a railway brake beam having a compression member, a brake head seated on the end thereof, a tension member extending through said head and tensioning means engaging the end of said tension member and the outer side of said head, said head including a ring-like part surrounding said tension member, and a wedge inserted between said tension member and the side of said part, said wedge having its forward or thin end bifurcated, there being a lug extending inwardly from the side of said part for spreading the bifurcations as the wedge is driven into place so as to bend the inner ends of the bifurcations behind the adjacent end of said part.

5. Structure as described in claim 4 in which the spreading lug is offset longitudinally of the ring-like part so that the passages for the wedge bifurcations are beyond the end of said part.

6. In a railway brake beam having a compression member, a brake head seated on the end thereof, a tension member extending through said head, tensioning means engaging the end of said tension member and the outer side of said head, said head including a sleeve part surrounding said tension member, and a wedge part inserted between said tension member and the side of said sleeve part, the inner ends of said parts having elements facing in opposite directions and opposing each other when the wedge part is driven home to distort at least one of the elements so as to resist withdrawal of the wedge part from the sleeve part.

7. In a brake beam having a compression member, a brake head member seated thereon, a tension member extending through said head member, and a device on the end portion of the tension member holding the members assembled, the head member having a ring-like part substantially surrounding a part of the tension member spaced from the holding device, a wedge-like key inserted between the opposing faces of the parts, and means for bifurcating the thin forward end of the key, as the latter is inserted between the parts, and spreading the bifurcations behind the inner end of the ring-like part to resist withdrawal of the key.

8. Structure as described in claim 7 in which the wedge spreading means comprises an element projecting from the ring-like part across the path of movement of the key.

9. Structure as described in claim 7 in which the bifurcating means comprises a separate piece overlying the tension member with one end seated against the inner face of the outer wall of the head member and the other end being pointed and directed towards the forward end of the key.

10. Structure as described in claim 1 in which the key distorting means comprises a separate piece overlying the tension member with one end seated against the inner face of the outer side of the head member and with its other end extending through the sleeve-like part alongside of the key, there being an element on the key distorting the outer end of said piece so that it engages the outer end of the sleeve-like part.

11. Structure as described in claim 7 in which the bifurcating means comprises a separate piece overlying the tension member with one end seated against the inner face of the outer side of the head member and with its other end extending through the ring-like part alongside of the key, there being an element on the key bifurcating the latter-mentioned end of said piece and positioning the piece bifurcations about the outer end of the ring-like part to resist movement of the piece towards the opposite side of the head member.

12. In a brake beam having a compression member, a brake head member seated thereon, a tension member extending through said head member, and a device seated against the outer face of the outer side of the head member and engaging the end portion of the tension member to hold the members assembled, the head member having a sleeve-like part extending inwardly from its inner side and substantially surrounding a part of the tension member spaced from the holding device, the inner end of the sleeve-like part terminating at a point spaced from the outer side of the brake head member, there being a channel in the inner face of the sleeve-like part extending lengthwise alongside of the tension member, a key inserted into said channel from the outer end of the sleeve-like part to thrust the tension member against the sleeve, the inner end of the sleeve including a lug in the channel for splitting the end of the key and spreading its split portions laterally and about the tension member to resist withdrawal of the key from the sleeve-like part.

13. A railway brake head for a built-up truss type brake beam having a ring-like part extending inwardly from one side of the head to receive the tension member of the beam, there being a recess extending lengthwise of the inner periphery of the part and shaped to receive and seat a wedge for thrusting the tension member against the opposite side of the inner periphery, the part including a projection at the inner end of said recess having a V-like edge extending transversely of the width of the recess so as to bifurcate the end of a wedge inserted in the recess and to spread the bifurcations behind the end of the part and thereby prevent withdrawal of the wedge.

14. In a brake beam having a compression member, a brake head member seated thereon, a tension member extending through said head member, and a device seated against the outer face of the outer side of the head member and engaging the end portion of the tension member to hold the members assembled, the head member having a sleeve-like part extending diagonally from its inner side to its outer side and substantially surrounding the tension member, the inner end of the sleeve-like part having a recess adjacent the end of the compression member to accommodate the close approach of the sleeve-like part to the compression member, and the sleeve-like part having a shoulder facing towards said inner end, a tightening key inserted between the opposing faces of said part and tension member, and means spaced from said recess for distorting the inner end of the key so that it engages said shoulder to resist withdrawal of the key.

15. A railway brake head, for a built-up truss type brake beam, having a seat for the end of a beam compression member and having a sleeve-like part extending diagonally from its inner side to its outer side and inclined towards said seat and adapted to receive the tension member of the beam, the inner end of the sleeve-like part having a recess adjacent said seat to accommodate the close approach of the sleeve-like part to a compression member received in the head, and the sleeve-like part having elements on its periphery spaced longitudinally of the part, from each other and from the ends of the sleeve and

facing respectively in opposite directions and arranged to respectively distort and engage the inner end of a key inserted in the sleeve-like part between its inner periphery and a tension member.

16. A railway brake head, for a built-up truss type brake beam, having a ring-like part opening towards the sides of the head to receive the tension member of the beam, there being a groove extending from one side of the head lengthwise of the inner periphery of the part and shaped to receive and seat a wedge for thrusting the tension member against the opposite side of the inner periphery, said groove terminating short of the inner end of the part, elements on the part near the inner end of the groove facing towards the other side of the head, and a projection in the groove near its inner end and arranged to bifurcate the end of a wedge inserted in the groove and to spread the bifurcations across said elements and thereby prevent withdrawal of the wedge.

LOUIS KADAR.