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[54] RAIL SEAT AND SUPPORT STRUCTURE

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[21] Appl. No.: **208,462**

Related U.S. Application Data

[63] Continuation of Ser. No. 10,242, Feb. 10, 1970, abandoned.

[52] **U.S. Cl.** **238/264,** 238/282, 238/283, 238/304, 238/346

[51] **Int. Cl.** **E01b 9/02**

[58] **Field of Search** 238/283, 264, 282, 280, 238/338, 343, 306, 207, 297, 309, 265, 305

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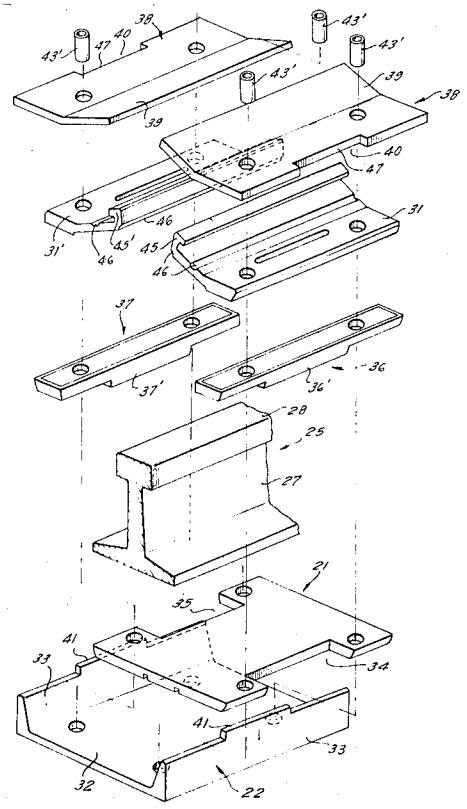
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[57] **ABSTRACT**

A rail seat and support structure for mounting, cushioning, anchoring and insulating a rail. A flexible rail seat is provided with the rail seat being of resilient material and having surfaces assisting in forming a recess. The recess is open to the exterior of the rail seat on its upper surface and has an interior configuration corresponding to the base flange and the lower portion of the vertical portion of the rail so as to receive and engage those portions of the rail in insulating, cushioning and bearing relationship. The rail seat also has at least one interior chamber adjacent to each side of the rail and a bar in each of the chambers. A base plate having a horizontal portion and two spaced upright longitudinal side walls is present and the rail seat is positioned in the base between the side walls and is adapted to receive the rail in substantially parallel relationship with the side walls. A clamping plate is positioned on the upper surface of the rail seat on both sides of the rail and mounting means are present for fastening the assembled rail seat and support structure to a rail bed so as to maintain the rail seat and support structure in assembled arrangement, connected to the rail bed, and to retain the rail in mounted, cushioned and insulated position.

13 Claims, 11 Drawing Figures



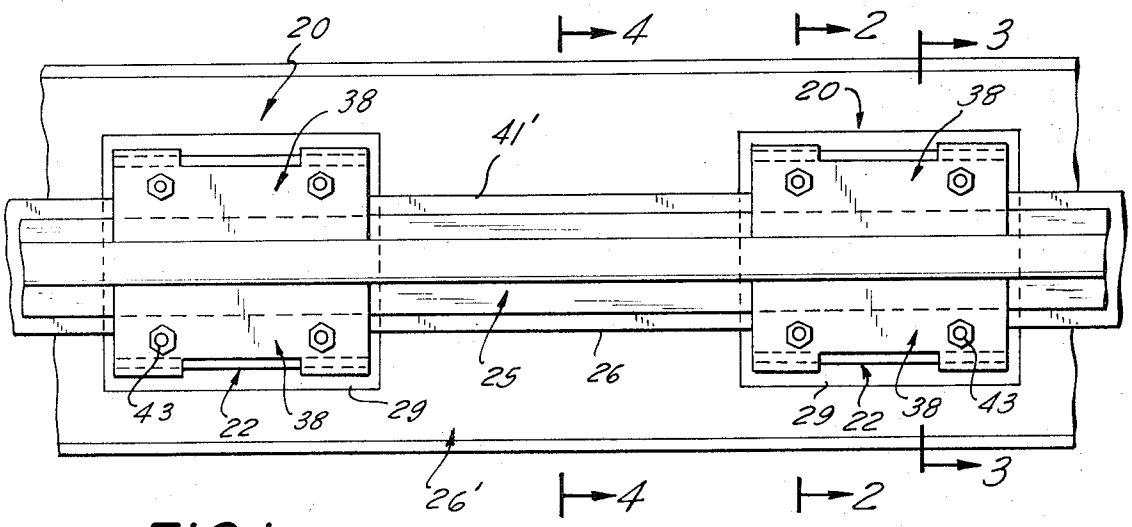


FIG. 1

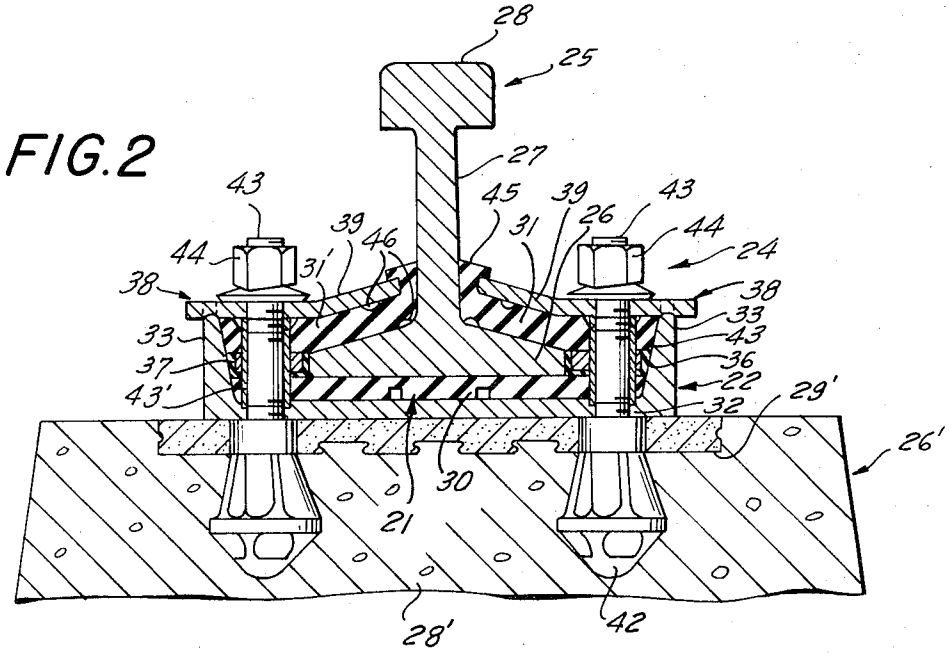


FIG. 2

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FIG. 3

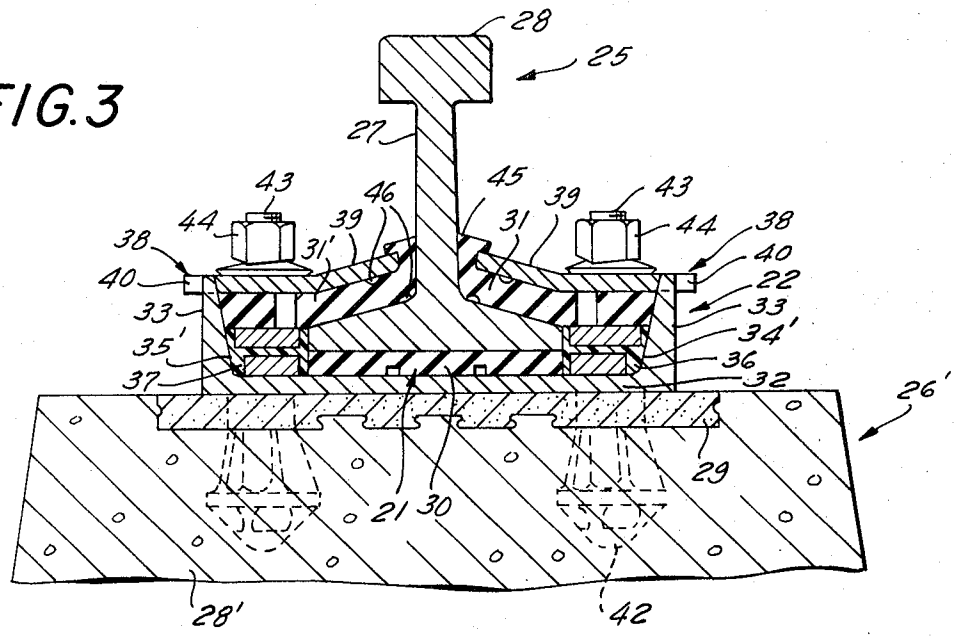
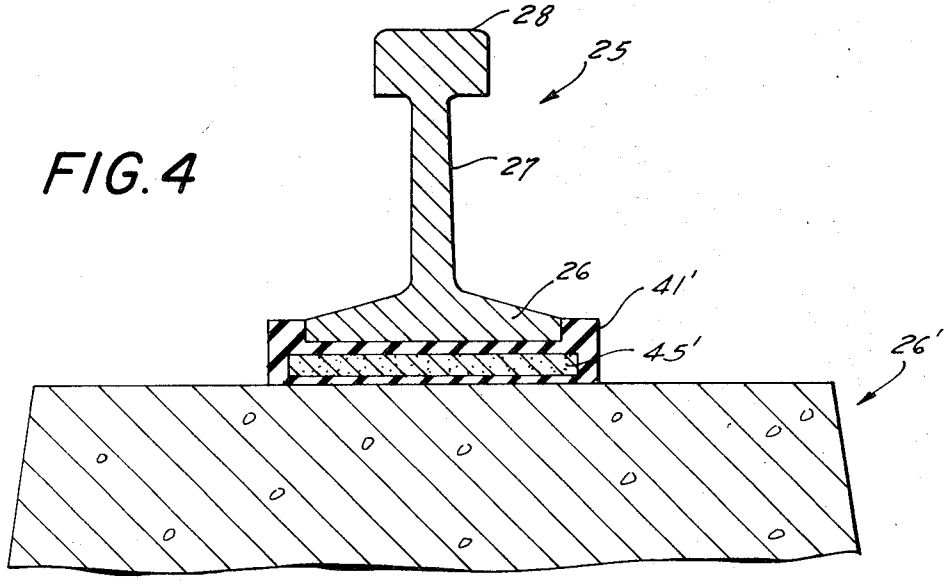


FIG. 4



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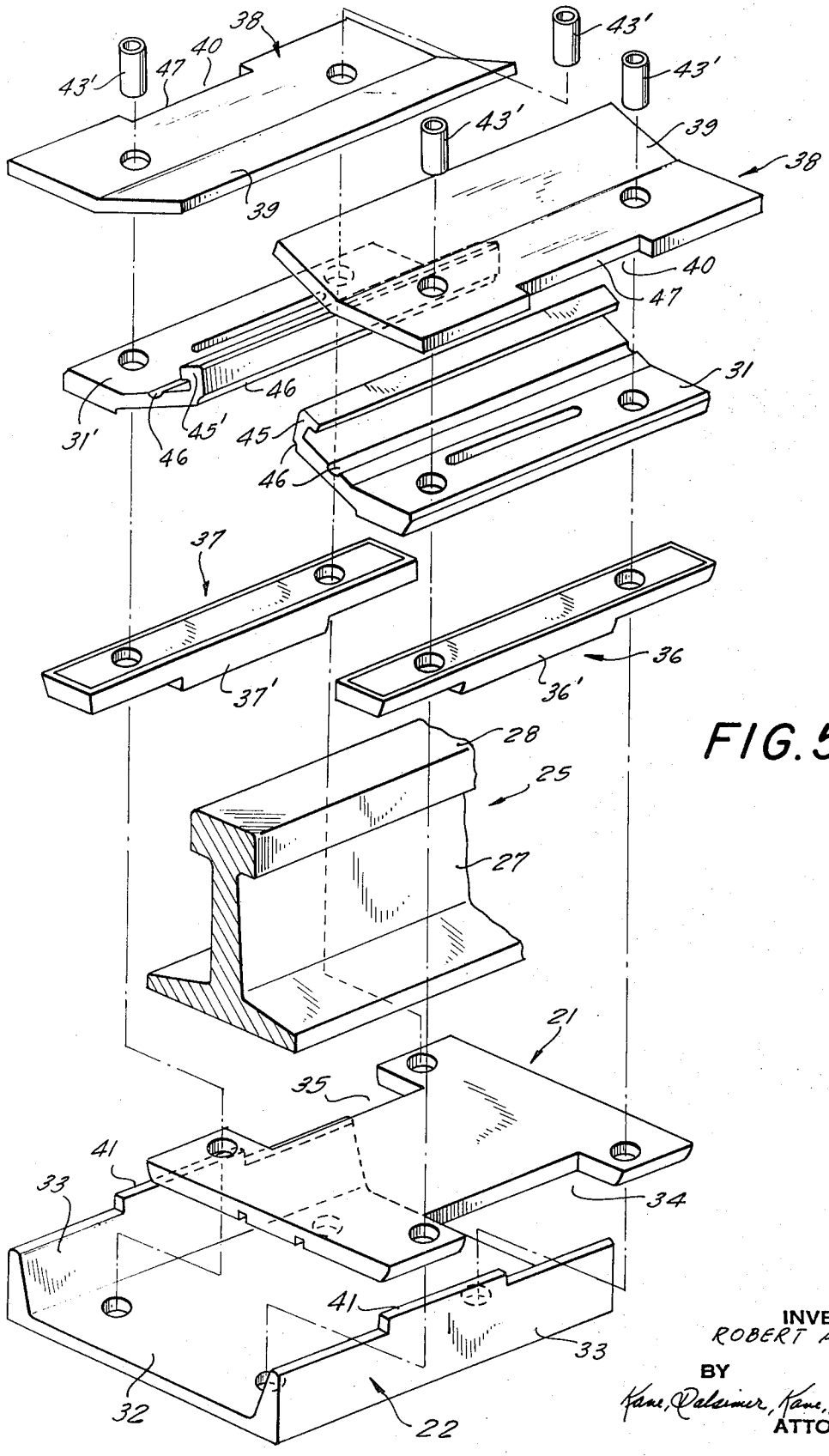
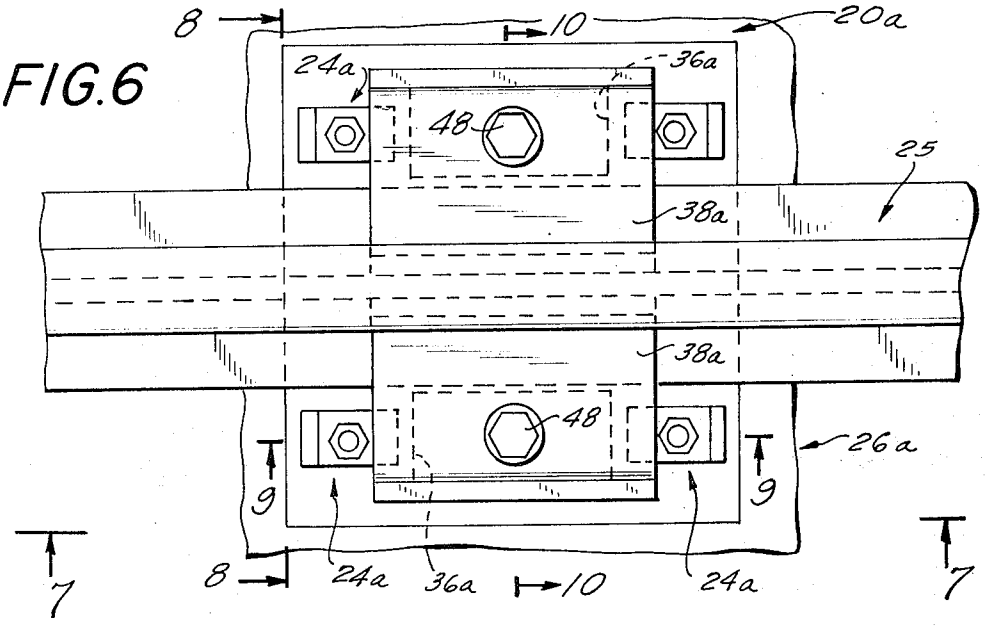


FIG. 5

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FIG.6



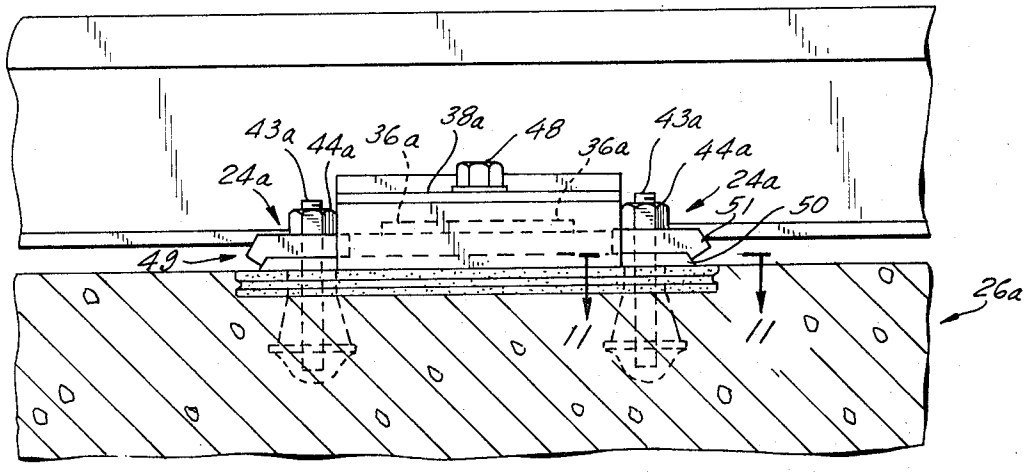
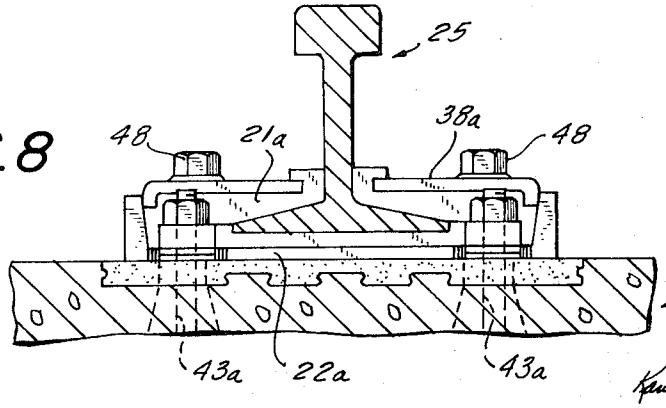


FIG.7

FIG.8



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FIG. 9

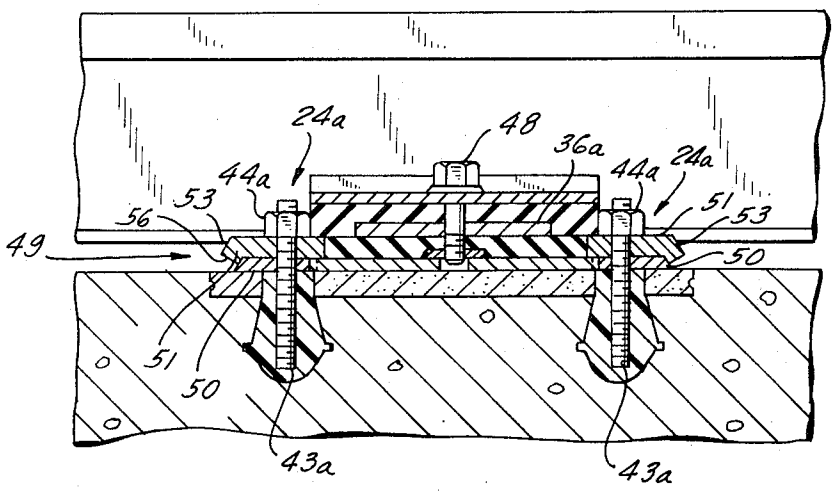


FIG. 10

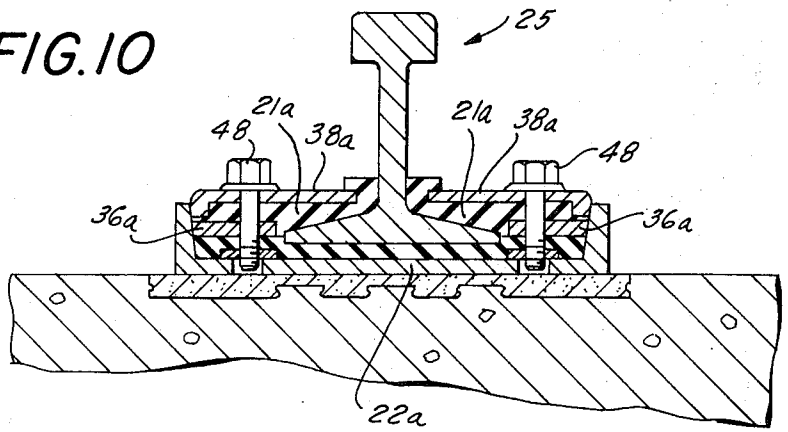
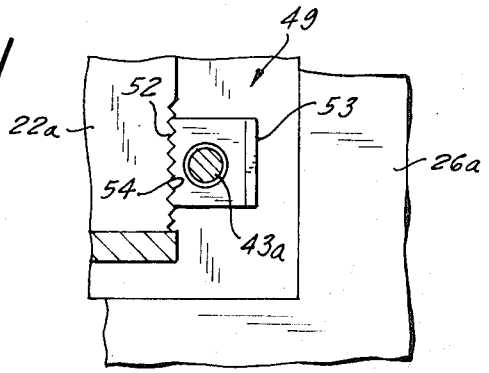


FIG. 11



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RAIL SEAT AND SUPPORT STRUCTURE

This is a continuation, of application Ser. No. 10,242, filed Feb. 10, 1970, now abandoned.

BACKGROUND OF THE INVENTION

In addition to cushioning and insulating a rail which is mounted in position to form a continuous track, it is important that the rail be adequately supported in both the lateral and longitudinal directions as well as vertically. This is particularly true when one is concerned with providing a track which is adequate and functional for the high speed as well as heavy freight, modern rail transportation vehicles.

At extremely high speeds, the rail which supports the rapidly moving vehicle must be able to withstand extremely high lateral stresses as well as high longitudinal stresses. There are various types of rail seat and supporting structures that are proposed and in use today which are directed principally toward cushioning the rail for high speed travel and insulating the rail from contact with the rail bed or other portions of the supporting structure. However, it has been found that on occasion the rail and supporting structure combination is subjected to extremely high lateral stresses and the presently available rail seat and supporting structures, although helpful in giving adequate support for high speed travel, have not been able to provide the resistance to the high lateral stresses occurring and the necessary stability which is most desirable as well as providing sufficient resistance to longitudinal stresses.

Therefore, it would be extremely advantageous in the art to provide a rail seat and support structure which will give the desirable amount of lateral and longitudinal support as well as cushioning, insulating and anchoring the rail mounted therein.

Naturally, it is also desirable in the art to provide a mounting means for the rail seat and support structure to rigidly mount the entire assembly to a rail bed with the mounting means affording the maximum amount of support for maintaining the rail seat and supporting structure in fixed relationship in respect to the rail bed for the longest possible period of time while minimizing the danger of loosening of the mounting means in the rail bed and consequently displacing of the rail seat and supporting structure from its fixed mounted position.

Furthermore, it is often desirable to adjust the rail laterally after it has been initially mounted in the rail seat and support structure and has been fastened to a rail bed. Therefore, it would be of value in the art to provide a means for laterally adjusting the rail in respect to the rail bed after it has been mounted to the rail seat and support structure and the rail bed.

With the existing high speed rail seat and support structures, the majority of the lateral stress on the rail is often transferred to the upper portion of the mounting means or bolts utilized in fastening the support structure to the rail bed. Under extremely high lateral stresses, the standard bolts normally used are not adequate to withstand such forces and will bend outwardly from the rail or shear and thereby cause failure of the support structure. It would be particularly effective if the majority of the forces caused by the lateral stress could be transferred from the upper or weaker portion of the fastening bolt means to the lower portion of the fastening bolt means adjacent to the rail bed where strength is greater and to additional vertical supporting surfaces to thereby distribute the forces and minimize the danger of failure due to lateral stress.

SUMMARY OF THE INVENTION

With the above factors in mind, among the primary objectives of this invention is to provide a rail seat and support structure which will adequately provide the necessary support in both a longitudinal and lateral direction in order to alleviate the danger of failure of the rail seat and support structure when it is subjected to extreme lateral or longitudinal stresses. The rail seat and support structure of this invention also provides for cushioning the rail in its fixed position within the support structure and insulating the rail from contact with other metallic elements which as discussed above are both desirable and necessary features for electrical and for high speed rail systems as well. Additionally, this invention provides mounting means for the rail seat and support structure which facilitates the mounting of the rail seat to a rail bed in a fixed manner while minimizing the danger of loosening of the mounting means in the rail bed and consequent displacement of the rail assembly from its fixed and mounted position. The mounting means are also resistive to corrosive and electrolytic action thereby adding an additional safequard against the weakening and possible displacement of the rail assembly from the rail bed. Furthermore, the invention provides for an adjustable means for laterally adjusting the position of the rail while it is in the mounted and fixed position as part of the rail assembly mounted to a rail bed.

This invention provides a rail seat and support structure for mounting, cushioning and insulating a rail. A flexible rail seat of resilient dielectric material is provided and has surfaces assisting in the formation of a recess. The recess is open to the exterior of the rail seat on its upper surface and has an interior configuration corresponding to the base flange and lower portion of the rail so as to receive and engage those portions of the rail in insulating and cushioning relationship. The rail seat has at least one interior chamber adjacent to the rail and a bar is located in each of said chambers. A base plate having a horizontal portion and two spaced upright longitudinal portions forms part of the support structure and the rail seat is positioned in the base between the side walls thereof and is adapted to receive the rail in substantially parallel relationship with the side walls. A clamping plate is positioned on the upper surface of the rail seat on both sides of the rail and mounting means which is adapted to be fastened to a rail bed and to the rail seat and support structure so as to maintain the rail seat and support structure in assembled arrangement, connected to the rail bed, and to retain the rail seat in mounted, cushioned, and insulated position thereon is provided as part of the over-all assembly.

With the above objects, among others, in mind, reference is had to the attached drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

In the drawings:

FIG. 1 is a fragmentary top plan view of two rail seat and support structures of the invention mounted to a rail bed in spaced relationship and having a rail mounted therein;

FIG. 2 is a fragmentary sectional end elevation view thereof taken along the plane of line 2—2 of FIG. 1;

FIG. 3 is a fragmentary sectional end elevation view thereof taken along the plane of line 3—3 of FIG. 1;

FIG. 4 is a fragmentary sectional end elevation view thereof taken along the plane of line 4—4 of FIG. 1;

FIG. 5 is an exploded perspective view thereof;

FIG. 6 is a fragmentary top plan view of an alternative embodiment of the invention shown mounted to a rail bed and having a rail mounted therein;

FIG. 7 is a fragmentary sectional side elevation view thereof taken along the plane of line 7—7 of FIG. 6;

FIG. 8 is a fragmentary sectional end elevation view thereof taken along the plane of line 8—8 of FIG. 6;

FIG. 9 is a fragmentary sectional side elevation view thereof taken along the plane of line 9—9 of FIG. 6;

FIG. 10 is a fragmentary sectional end elevation view thereof taken along the plane of line 10—10 of FIG. 6; and

FIG. 11 is a fragmentary sectional top view thereof taken along the plane of line 11—11 of FIG. 7.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

FIGS. 1–5 show one embodiment of the rail seat and supporting structure assembly **20** of this invention. Assembly **20** includes a rail seat **21**, a base plate **22**, a clamping plate **38** and mounting means or bolt assemblies **24**. In the embodiments shown as being representative of the concept of this invention, the assembly **20** is adapted for fastening a rail **25** of the type shown to a rail bed **26'**.

It will be noted that rail **25** includes a base flange **26**, a vertical connecting portion **27** and a rail head **28**. In turn, the rail bed includes a concrete base **28'** having a prefabricated asbestos cement panel **29'** with steel studs and plastic concrete anchors cast into its upper surface. Panel **29'** is permanently mounted in the foundation. The asbestos cement panel provides a prefabricated hardened and smooth surface on which to place assembly **20** which seats and supports rail **25**. A prefabricated unit is provided which holds the studs and concrete anchors in exact location with perfect spacing, verticalness and stud alignment and also provides a hardened and smooth surface three times tougher than concrete on which to place assembly **20** along with whatever other member desired.

Rail seat **21** is constructed of a resilient dielectric cushioning material such as Butyl rubber. The rail seat is preformed in a number of pieces which when assembled assume a desired configuration having particularly desirable recesses as discussed below. To facilitate assembly of the rail seat and support structure **20**, the rail seat may be constructed as a three-piece arrangement with a lower bottom portion **30** and upper top or cover portions **31** and **31'**. The configuration of the over-all assembly of rail seat **21** is such that it will substantially entirely fit within the chamber formed by base plate **22**.

Base plate **22** consists of a bottom plate **32** which is horizontally positioned on panel **29** and two upstanding substantially parallel side walls **33** extending the longitudinal length of assembly **20**. Rail seat **21** may be positioned within the chamber formed by the horizontally positiond base plate **22** and upstanding side walls **33**. The inner surface of each upstanding side wall **33** is sloped outwardly slightly from bottom to top, for example on the order of two degrees, to facilitate positioning of rail seat **21** within base plate **22** so as to permit rail seat **21** to assume its natural configuration when rail seat and support strucrure **20** is assembled and mounted to the rail bed **26**.

The bottom portion **30** of rail seat **21** has a pair of opposing rectangular shaped recesses **34** and **35** located therein which serve to assist in forming a pair of chambers **34'** and **35'** when the upper portions **31** and **31'** of rail seat **21** are positioned on lower portion **30**. Each chamber **34'** and **35'** is defined by the underside of the top portion **31** or **31'**, the adjacent outer edge of rail flange **26**, the wall surface of recess **34** or **35**, the inner surface of the bottom **32** of base plate **22**, the inner surface of a side wall **33** and the upper surface of the outer portions of bottom portion **30** of the rail seat. Located within chambers **34'** and **35'** are a pair of rectangular shaped bars **36** and **37** which conform to the shape of chambers **34'** and **35'** and the upper part of which abuts, on one side, against the inner surface of upstanding sides **33** of base plate **22** and on the other side against the rail flange. To achieve this condition, the side of chambers **34'** and **35'** adjacent to upright portions **33** are open to the inner surface of upright portions **33** permitting communication between bars **36** and **37** and upright portions **33**. In turn, the side of each chamber above recesses **34** and **35** and adjacent the rail flange are open to the outer edge of the flange thereby permitting communication between the bars and the rail. Additionally, the bars **36** and **37** have rectangular projections **36'** and **37'** respectively extending from the lower surface thereof. Each projection conforms to the shape of recesses **34** and **35** so as to be confined in position by the side wall of each recess **34** and **35** and the inner surface of bottom plate **32**. In order to maintain the insulated condition of the rail as well as to maintain maximum support, the bars **36** and **37** are generally constructed of a strong, yet non-conductive material. A metallic bar of, for example, steel housed with a molded plastic cover of insulated material has been found to function satisfactorily in this regard. In this manner no metallic portion of the support contacts the rail.

Positioned on the upper surface of rail seat **21** are a pair of opposed clamping plates **38** with each clamping plate being similar in configuration. The configuration of clamping plates **38** is substantially rectangular with the inner portion **39** thereof extending upward from the horizontal as it approaches the rail. Portions **39** are insulated from contact with rail **25** by means of the inner upper portions **45** and **45'** of cover portions **31** and **31'** which extends therebetween.

A portion of each clamping plate **38** distal from the rail **25** in assembled position contains a centrally located detent or recess **40** which is of sufficient size and configuration so as to receive upward projection **41** extending from the central upper surface of each side wall **33** of base plate **22**. With this arrangement, the inner surface of projection **41** engages with surfaces on detent **40** so as to assist in laterally and longitudinally supporting clamping plate **38**.

Each mounting means **24** consists primarily of a rigid insert **42** permanently mounted in concrete base **28'**, and upwardly extending threaded stud **43** permanently mounted within insert **42** and a locking nut **44** having a threaded bore which engages with the threaded outer surface of stud **43** to maintain assembly **20** in fixed relationship and mounted to rail bed **26**. To facilitate proper installation and bolting pressures, the spacing

sleeve 43' surrounds the central portion of stud 43. Sleeve 43' is of a rigid sturdy material such as steel. The steel clamping plate 38 comes to bear on the sleeve when it is bolted down in final position. The sleeve in turn bears on the base plate. In this manner the depth to which the clamping plate can be lowered is regulated by the vertical height of the sleeve. When the sleeve sits on the base plate and the clamping plate sits on the sleeve, the assembly can be compressed no futther. This permits the load on the resilient rail seat to be pre-set to the desired amount and also permits the load on the stud to be pre-set. In this manner, the loads on certain portions of the assembly can be closely controlled during assembly and prior to use. Therefore, the strongest possible support assembly can be provided for all types of eventual loads. Each anchor or insert 42 is of an irregular shape to facilitate its permanent positioning within concrete base 28'. It may be constructed of many convenient materials, however, one material which has been found to be satisfactory is a hard plastic which may be molded in an irregular configuration, is a substantially dielectric material, resists corrosion and is resistant to electrolytic action. There are several types of plastics which will work adequately and one should be chosen which is resilient in addition to other qualities in order to prevent damage to the concrete due to lateral and longitudinal stresses which would loosen the insert and increase the chances of the support structure assembly 20 being displaced from its fixed position in the rail bed. Mounted permanently in plastic insert or anchor 42 is the lower end of stud 43 and it extends substantially vertically upwardly therefrom when rail seat and support structure 20 is properly positioned for assembly, there are a set of aligned openings in cement panel 29', base plate 32, rail seat 21 and clamping plate 38. Each stud 43 extends upwardly through a set of these aligned openings and an additional distance above the upper surface of clamping plate 38. Sleeve 43' surrounds a portion of stud 43. A nut 44 having a threaded bore therethrough is then engaged with the threaded outer surface of the upper end of the stud 43 to lock rail seat and support structure 20 in position.

In laying track, each assembly 20 may be positioned at predetermined spacing along the length of the track with the distance being a matter of choice. It has been found that one assembly 20 positioned at approximately every 30 inches of rail has been found to work satisfactorily. It is of no great consequence whether the assembly 20 is positioned where two lengths of rail are joined or intermediate the ends of one length of rail 25.

For further cushioning effect in heavier load applications, a channel 41' may be positioned under the rail between each pair of assemblies 20. The channel 44' would be of a similar flexible material as that of the rail seat and would embrace the bottom and the side edges of the rail flange. It may also abut each pair of assemblies 20 to form a substantially continuous cushion for the rail as it rests on cement panel 29. It is preferable and generally necessary to use channel 41' in trackage where trains have axle loads exceeding thirty thousand pounds. An asbestos cement panel 45' is positioned within a recess in the channel 41' to increase the strength of the channel in support of the rail and to provide the correct thickness of the elastomer. As shown in FIG. 4, panel 45' is insulated from the rail by a portion of channel 41'.

For exemplary purposes the type of rail or track 25 shown in the drawings will be discussed. This is a common type of rail in use today and basically consists of a lower flange portion 26, an intermediate upright connecting portion 27 and a rail head portion 28.

In laying the track, the rail bed 26 is naturally positioned first with mounting means 24 solidly fixed in position so that studs 43 extend upwardly at the desired intervals. The base plate 22 is then positioned on studs 43 and the lower portion 30 of rail seat 21 is positioned within base plate 22. Bars 36 and 37 may then be positioned in chambers 34 and 35 intermediate each successive pair of bolts. It should be noted in the embodiment shown in FIGS. 1 through 4 that there are four separate mounting means 24 with each one being positioned adjacent a corner of rectangular support structure 20. Each bar 36 is positioned between the pair of stud assemblies on each side of rail 25. Channels 41' are then placed between each pair of assemblies 20 on concrete formation 28'. The base portion 26 of rail 25 may then be positioned in the central recess of the lower portion 31 of rail seat 21 on portion 30 and on the adjacent channels 41'. The upper portions 31 and 31' of rail seat 21 are then placed within base plate 22 with its pre-formed holes passing over each individual stud assembly as was done with the lower portion 30 of rail seat 21. The central opening between upper portions 31 and 31' of rail seat 21 is preferably designed with a configuration approximately the lower part of vertical connection portion 27 of rail 25. The head 28 of the rail extends above the upper surface of assembly 20 to permit a vehicle thereon.

The clamping plates are then positioned on the stud assemblies with one clamping plate 38 being positioned on each side of the upper surface of support structure 20. As previously discussed, the inner portion of clamping plate 38 extends upwardly with respect to the horizontal as it approaches rail 25. The inner edge of plate 38 is insulated from contact with rail 25 by means of an interposed lip portion 45 of rail seat 21. This interposed portion 45 provides insulation means to help prevent rail 25 from contacting any other portion of the rail seat and supporting structure other than rail seat 21.

It should also be noted that upper portion 31 of rail seat 21 in its unfastened position normally extends above the plane of the upper surface of the majority of side walls 33. Therefore, before assembly 20 is fastened by means of nuts 44, the lower surface of clamping plates 38 do not contact the upper surface of side walls 33. This space along with the outwardly sloping side walls and the detents 46 in the upper and lower surfaces of upper portion 31 and 31' permits a margin of movement for the rail seat so that when assembly 20 is locked in position by means of nuts 44, the resilient rail seat may conform to its naturally compressed condition to provide resilient support, cushioning, insulating and anchoring for the entire rail and support structure assembly.

Nuts 44 are then threaded downwardly on studs 43 driving clamping plates 38 downward into locking engagement and solidifying assembly 20 so that rail 25 is held in positive fixed position.

The resultant assembled structure provides high resistance to longitudinal stress by means of the positioning of the mounting means assemblies 24 and the en-

gagement between the end walls of projection **41** and the side walls **47** of detent **40** among other strengthening features of the assembly. Naturally, a particularly advantageous feature of the above discussed assembly is its resistance against extreme lateral stresses imposed upon rail **25** during use in high speed or heavy freight transportation. A portion of the lateral stress is absorbed by the engagement between the outer surface of detent **40** and the inner surface of projection **41.** Additionally, another large portion of the lateral stress is taken up by the side walls **33** of base plate **32** which extend upwardly and tend to hold the whole assembly against lateral stress. Additional support is also present in the rail seat itself in the form of the bars **36** and **37** which engage with the side walls **33** and tend to hold the rail and rail seat in position within the assembly under the forces of lateral stress. Furthermore, the particular configuration of base plate **22,** the positioning of bars **36** and **37,** and the presence of projection **41** assist in transferring the majority of the stress on studs **43** to the base portion of studs **43** and away from the upper or top portion of studs **43.** Naturally, studs **43** are much stronger at the lower base portion where it is anchored within inserts **42.** It would take a much larger force to cause studs **43** to fail at the base than it would take applied to its upper end to cause it to bend and fail. The metal sleeves **43'** around each bolt also add additional support to the bolts and the assembly. The over-all result of the above discussed strengthening features is to provide a much stronger rail seat and support structure **20** which is resistant to very high lateral stresses than was previously known in the art.

An alternative embodiment is disclosed in FIGS. **6–11.** This embodiment includes all of the strengthening features of the previously discussed embodiment and additionally includes adjusting means for laterally re-positioning a rail after it has been fastened to a rail seat in the manner as discussed with respect to the above discussed embodiment. The rail seat and support structure **20***a* shown in FIGS. **6–11** includes many of the elements as previously discussed with respect to the embodiment of FIGS. **1–5** and many similarly functioning elements including a pair of rectangularly shaped bars **36***a* located in chambers within rail seat **21***a*. However, the significant differences lie in the mounting means **24***a* which are located at each corner of the rectangular shaped assembly **20***a*. Mounting means **24***a* are permanently fixed in rail base **26***a* in a similar manner as in the previous embodiment. However, several additional components are employed which connect mounting means **24***a* with assembly **20***a* and form a portion of the adjusting means present in this embodiment. Additionally, each clamping plate **38***a*, the rail seat **21***a* and base plate **22***a* are interconnected by means of a stud assembly **48** passing through a number of aligned holes in each respective element. The holes are also aligned with a hole through each bar **36***a* so that stud assembly **48** passes through a bar **36***a*along with the above discussed elements. This enables each stud assembly **48** to be located intermediate each pair of mounting means **24***a*. This arrangement with the presence of stud assembly **48** permits the mounting means **24***a* to be loosened by threading nut **44***a* upwardly thereon without loosening the assembled arrangement of the clamping plates, rail seat and base plate which hold rail **25** in fixed position within those elements. Therefore, by loosening mounting means **24***a* the rail and other elements held together by stud assembly **48** may be moved laterally to a new position without disturbing the relationship between those connected elements as will be discussed in detail below.

The adjusting means **49** which permit lateral adjustment of rail **25** and connecting elements which are held in engaged relationship by means of stud assembly **48** includes a base lug **50** and a clamping lug **51** both of which have centrally located holes so that they may be positioned on a bolt **43***a*. With the assembly as shown, each mounting means **24***a* includes one base lug **50** and one clamping lug **51.**

The base lug **50** has a generally rectangular configuration with a ratchet-like forward surface **52** and a beveled rear surface **53.** The ratchet-like forward surface **52** engages with a similar ratchet-like surface **54** on the side edge of base plate **22***a*. Clamping lug **51** is also of a rectangular configuration slightly larger in diameter than base lug **50** so that it extends forwardly and rearwardly of base lug **50.** The forward extending portion of clamping lug **51** forms a flange, the lower surface of which engages with the upper surface of base plate **22***a* so that when nut **44***a* is threaded downwardly into locking engagement the undersurface of flange portion of clamping lug **51** will be forced downwardly on the upper surface of base plate **22***a* and will assist in maintaining assembly **20***a* in fixed position with respect to rail bed **26***a*. The rearwardly overlapping and extending portion of clamping lug **51** projects downwardly in a less than vertical direction to form an angular lip **56.** The inner surface of lip **56** engages and mates with the beveled rear surface of base lug **50.** This angular engagement serves two purposes when nut **44***a* is threaded downwardly on stud **43***a*. It provides a downward locking force on base lug **50** and additionally provides an inwardly directed force so as to maintain a fixed interengagement between ratchet surfaces **52** and **54** so that all of rail seat and support structure **20***a* is maintained in a fixed lateral position. When it is desired to alter the lateral position of the elements discussed above, nuts **44***a* may be loosened thereby relieving the engagement between clamping lug **51** and base lug **50** and permitting base lug **50** to be moved outwardly away from base plate **22***a* so that ratchet surfaces **52** and **54** may be disengaged on all four respective mounting means **24***a* and permitting lateral movement of the elements held together by means of stud assembly **48.** Naturally, in order to permit the movement of base lug **50** inwardly and outwardly with respect to the engagement and disengagement of ratchet surfaces **52** and **54,** the hole in base lug **50** must be larger than the diameter of stud **43***a* to permit play between base lug **50** and stud **43***a*. When the rail and parts assembled thereto by means of stud assembly **48** has been moved to the newly desired lateral position, nut **44***a* may be threaded downwardly on bolt **43***a* on all four mounting means and adjusting assemblies **24***a* to re-engage the respective ratchet surfaces **52** and **54** and once again fix the lateral position of all elements in assembly **20***a*and rail **25.** In the above manner, an adjusting means is provided as part of the invention embodied herein so that lateral adjustment may be made with respect to a rail arrangement after the rail seat and supporting structure have been mounted and fixed with respect to the rail bed.

Thus, the above objectives of the invention, among others, are effectively achieved.

I claim:

1. A rail seat and support structure for mounting, cushioning, insulating and anchoring a rail having a base flange, a head and an intermediate vertical connecting portion to join the base and head comprising:

a flexible rail seat of resilient dielectric material and having surfaces assisting in forming a recess therein;

said recess open to the exterior of said rail seat on the upper surface thereof and having an interior configuration corresponding to the base flange and the lower part of said vertical portion of the rail so as to receive and engage those portions of the rail in insulating and cushioning relationship;

said rail seat having at least one interior chamber adjacent to said rail;

an insulated substantially rigid bar in each of said chambers;

a base plate having a horizontal portion and two spaced upright longitudinal side walls;

the rail seat positioned in said base between said side walls and adapted to receive the rail in substantially parallel relationship with said side walls;

a clamping plate positioned on the upper surface of said rail seat on both sides of the rail; and

mounting means adapted to be fastened to a rail bed and to said rail seat and support structure so as to maintain said rail seat and support structure in assembled arrangement, connected to said rail bed, and to retain said rail in mounted, cushioned, anchored, and insulated position thereon.

2. The invention in accordance with claim 1 wherein said chamber and said bar are rectangular in configuration with the longest side thereof being substantially parallel to said side walls and said rail.

3. The invention in accordance with claim 1 wherein the distance between the inner surfaces of said side walls is slightly greater at the upper portions thereof than at the lower portions.

4. The invention in accordance with claim 1 wherein each of said side walls has a centrally located projection extending upwardly therefrom and the clamping plate on each side of said rail contains a corresponding recess so that when said rail seat and support structure is assembled, the inner surface and end surfaces of said projections will form a bearing surface for the corresponding adjacent surface of each clamping plate to thereby provide additional lateral and longitudinal support for said rail seat and support structure.

5. The invention in accordance with claim 1 wherein the inner surfaces of said clamping plates are in engagement with said rail seat thereby assuring that said rail only contacts said rail seat when mounted within said rail seat and support structure.

6. The invention in accordance with claim 1 wherein said mounting means includes at least a pair of stud assemblies with each bolt assembly mounted in alignment with another on opposite sides of the rail, each said stud assembly including an enlarged rigid insert permanently mounted in said rail bed, a stud extending upwardly therefom and having a threaded upper end, said stud extending through aligned openings in said rail bed, said base plate, said rail seat, and said clamping plate, and a threaded nut mounted on the threaded upper end of said stud so that when said nut is threaded a predetermined distance on said stud with respect to each of said stud assemblies, said rail seat and support structure will be rigidly mounted to said rail bed and said rail will be rigidly mounted in said rail seat and support structure.

7. The invention in accordance with claim 1 wherein said rail bed includes a concrete base portion with an asbestos cement panel in the upper surface thereof.

8. The invention in accordance with claim 1 wherein the inner portion of said clamping plate extends upward at an angle from the horizontal as it approaches the rail.

9. The invention in accordance with claim 1 wherein adjusting means are provided on said rail seat and supporting structure to facilitate the adjustment of said rail in a lateral direction subsequent to its assembly to said rail bed.

10. The invention in accordance with claim 9 wherein fastening means are provided to fasten said clamping plate to said rail seat and base plate so as to lock said rail in rigid position within said rail seat and support structure, said mounting means including at least two stud assemblies with each stud assembly including a rigid insert mounted in fixed position in said rail bed and a stud extending upwardly therefrom, said stud having a threaded upper portion and extending through aligned openings in a base lug and a clamping lug positioned on said base lug, a nut having a threaded inner surface is positioned on the upper threaded end of said stud, one end of said clamping lug and base lug mounted on said rail seat and support structure, the other end portion of said base lug having a beveled surface, the other end portion of said clamping lug having a downwardly curved configuration and an angular undersurface normally positioned in mating relationship with the beveled upper rear surface portion of said base lug so that when said nut is threaded downwardly on said stud said clamping lug will be biased in a downward direction on the end thereof in engagement with the rail seat and support structure and will rigidly hold said rail seat and support structure into engagement with the rail bed and the angular engagement between the undersurface of the rear portion of the clamping lug and the beveled upper surface of the rear portion of the base lug will tend to bias said base lug toward its end in engagement with the rail seat and support structure to assist in maintaining said rail seat and support structure in engagement with said rail bed.

11. The invention in accordance with claim 10 wherein said adjusting means includes a ratchet-like surface on the portion of the base lug which engages with the rail seat and support structure and a corresponding ratchet-like surface on the rail seat and support structure so that when said nut is threaded downwardly on said stud said ratchet-like surfaces will interengage and fix the lateral position of said rail seat and support structure with respect to said rail bed and when said nut is threaded upwardly on said stud said clamping lug will loosen from engagement with said base lug permitting said base lug to be withdrawn from said rail seat and supporting structure so that said interengaged ratchet surfaces are disengaged and said rail seat and supporting structure may be laterally moved a predetermined distance at which point said nut may be threaded downwardly on said stud to re-engage said ratchet surfaces and fix said rail seat and support structure in the second lateral position.

12. The invention in accordance with claim 1 wherein a number of the rail seat and supporting structures are positioned at predetermined intervals along a length of rail and a flexible channel member is positioned beneath the rail and between each successive two rail seat and support structures to facilitate support of said rail, said channel member containing a recess insulated from said rail to receive a rigid panel to aid said channel in supporting said rail.

13. A device of the type set forth in claim 1 as used in a track assembly comprising:

a rail bed;

a rail;

said rail seat and support structure for mounting, cushioning, insulating and anchoring a rail connected to said rail;

mounting means fastened to said rail bed and to said rail seat and support structure so as to maintain said rail seat and support structure and attached rail in connection to said rail bed;

adjusting means on said rail seat and supporting structure and on said mounting means to facilitate the adjustment of said rail in a lateral direction subsequent to its assembly to said rail bed.

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