I. A. MILLER.

RAIL FASTENING.

APPLICATION FILED JULY 9, 1913.

1,082,433.

Patented Dec. 23, 1913.

3 SHEETS—SHEET 1.

Fig. 1.

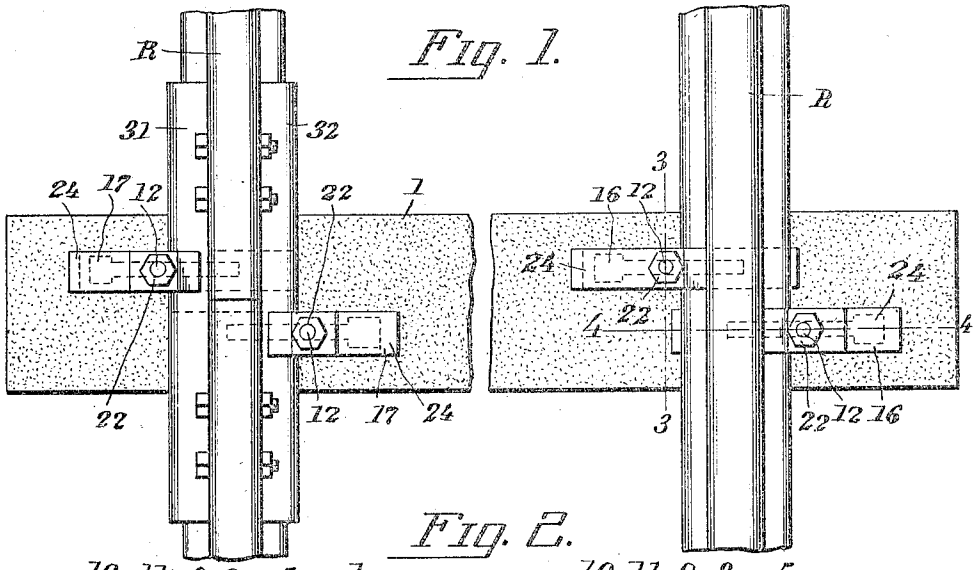
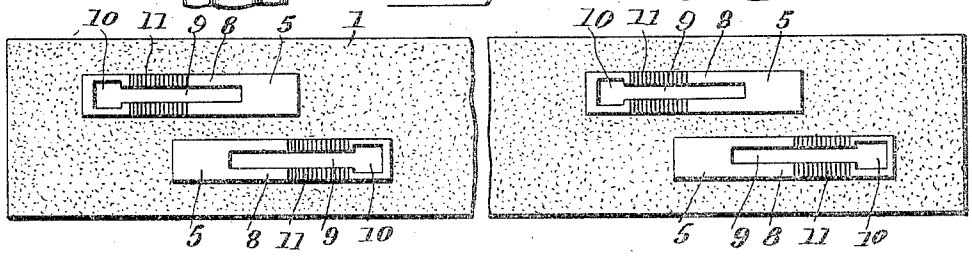


Fig. 2.



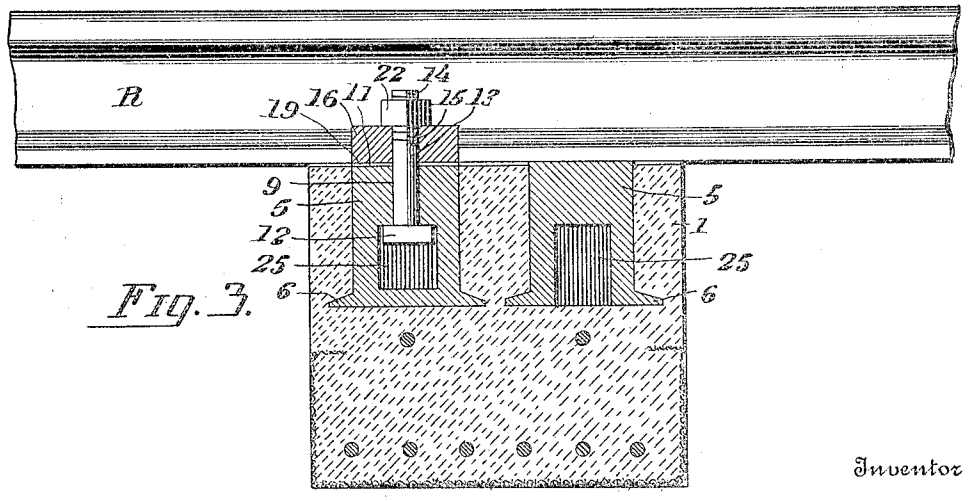


Fig. 3.

Witnesses

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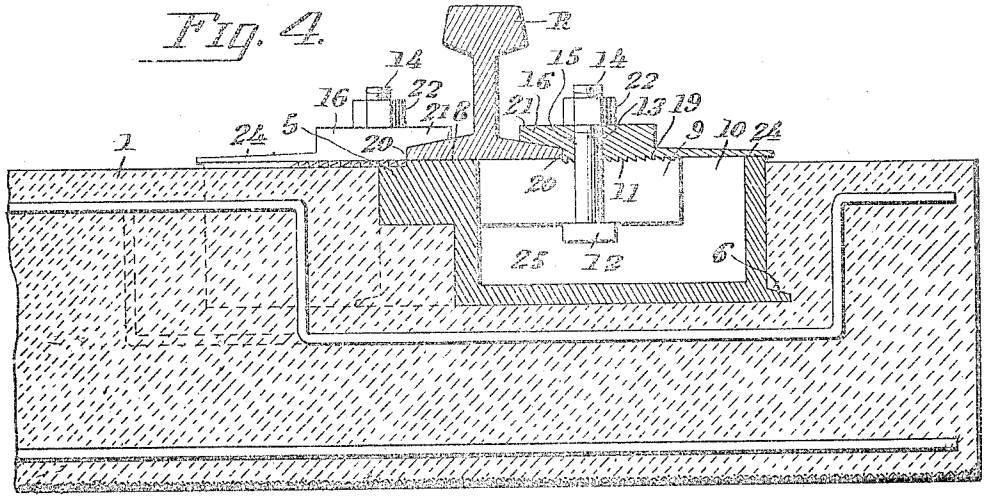
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3 SHEETS—SHEET 2.

Fig. 4.



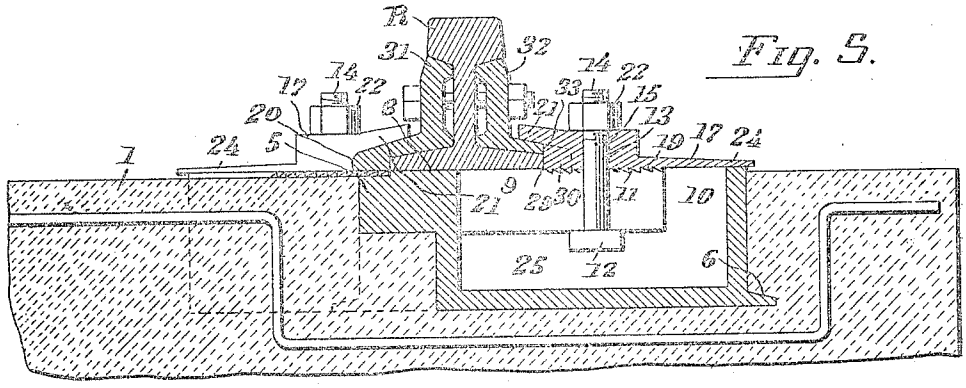


Fig. 5.

Fig. 6.

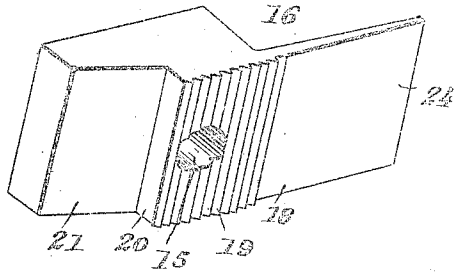
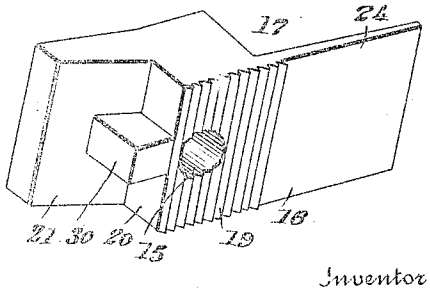


Fig. 7.



Witnesses

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3 SHEETS—SHEET 3.

Fig. 8.

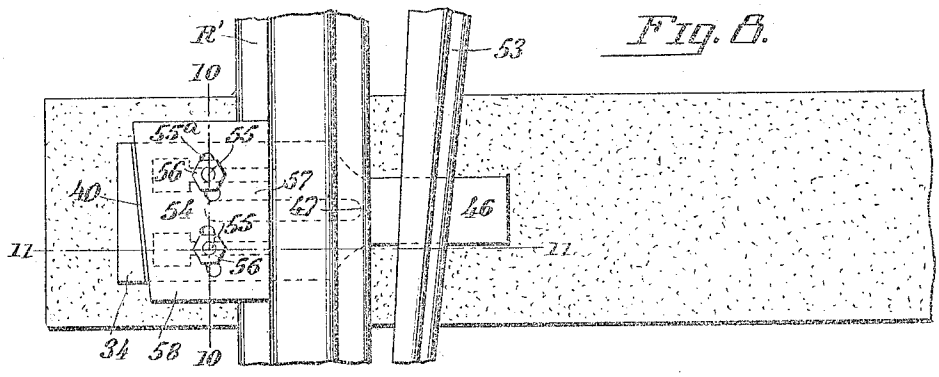


Fig. 9.

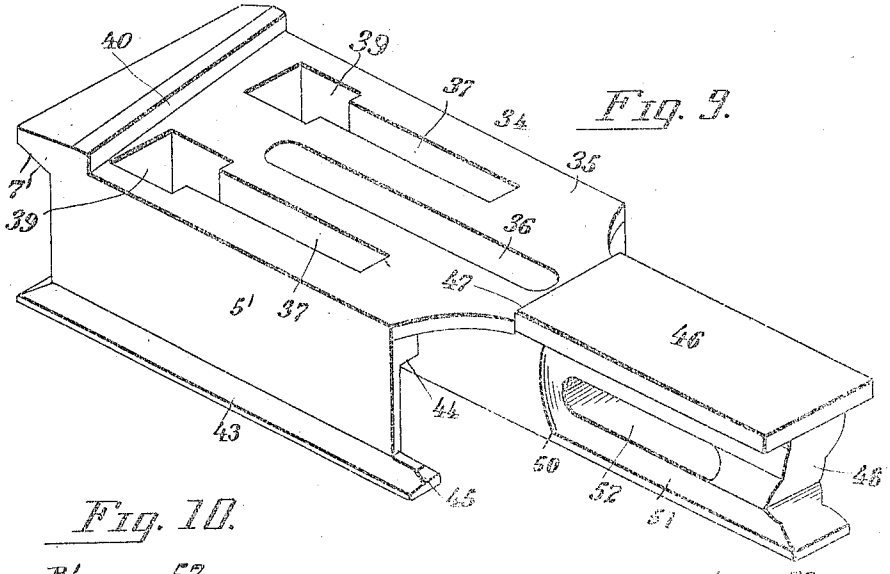


Fig. 10.

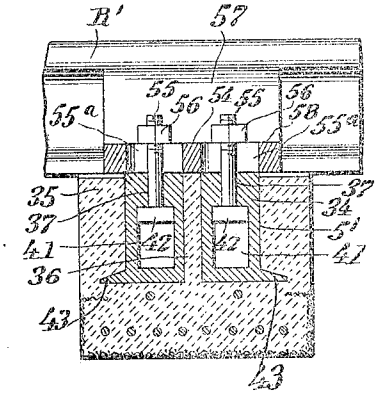
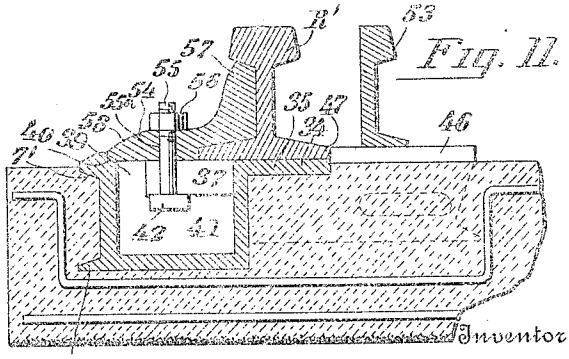


Fig. 11.



Witnesses

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UNITED STATES PATENT OFFICE.

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RAIL-FASTENING.

1,082,433. Specification of Letters Patent. Patented Dec. 23, 1913.

Application filed July 9, 1913. Serial No. 778,190.

To all whom it may concern:

Be it known that I, IVES A. MILLER, a citizen of the United States, residing at Grapeville, in the county of Westmoreland and State of Pennsylvania, have invented new and useful Improvements in Rail-Fastenings, of which the following is a specification.

The present invention relates to improvements in rail supporting and fastening means primarily adapted for use upon plastic ties.

In carrying out my invention it is my purpose to provide a plastic tie with metallic rail seats which have rail securing means associated therewith, the seats being disposed away from each other and out of contact with the metallic reinforcements for the tie to prevent the short circuiting of an electric current flowing through the rails or from an electric conductor contacting with the joints or meeting ends.

I also aim to provide a plastic tie with metallic rail seats which have removable rail securing elements associated therewith, one of the seats providing a rest or bearing face for a movable switch point which is arranged above the bearing face of the seat proper, the sustaining element for the rail embodying a switch member as well as a supporting plate, whereby the said rail will have one of its longitudinal edges forced into tight contacting engagement with a shoulder provided between the seat and the switch point plate.

A further object of the invention is the construction and arrangement of metallic rail seats which are embedded within a plastic tie and which are so shaped as to provide reinforcing elements for the tie, and which, when embedded within the tie will so support themselves as to prevent movement in any direction with respect to the tie.

With the above recited objects in view, and others which will appear as the nature of the invention is more fully understood, the improvement resides in the construction, combination and arrangement of parts set forth in the following specification and falling within the scope of the appended claims.

In the drawings: Figure 1 is a top plan view illustrating a plastic tie provided with my improvement, the rails being positioned upon the metallic seats of the tie, Fig. 2 is a similar view, the rails and rail securing elements being removed, Fig. 3 is a sectional view on the line 3—3 of Fig. 1, Fig. 4 is an enlarged longitudinal sectional view taken approximately on the line 4—4 of Fig. 1, Fig. 5 is a similar sectional view but illustrating the rail having one of its edges notched and one of the fastening members provided with an integral lug which is adapted to be received within the notch, Fig. 6 is a perspective view of one of the rail securing elements, Fig. 7 is a similar view of another form of a rail securing member, Fig. 8 is a plan view of one of the end portions of a tie illustrating a metallic seat formed with a plate which provides a seat or bearing for the switch point, Fig. 9 is a perspective view of the seat, Fig. 10 is a sectional view on the line 10—10 of Fig. 8, and Fig. 11 is a longitudinal sectional view on the line 11—11 of Fig. 8.

The plastic tie is designated by the numeral 1 and is provided with the usual metallic reinforcements. The tie is formed in a suitable mold, and during the process of its construction, I arrange within the mold, adjacent the ends thereof, metallic rail seats 5, at least two of which being disposed at each of the ends of the mold, and these seats are adapted to have their upper faces disposed a slight distance above the upper face of the tie, so that the rails when arranged upon the seats are not contacted by the body of the tie. The seats 5 each comprise a substantially rectangular member which includes straight sides and ends and horizontally straight bearing faces and bottoms. The lower edges of the member 5 are formed at their corners with outwardly extending flanges 6 which prevent the vertical movement of the said members when the tie is molded, while the vertically straight sides and ends prevent either longitudinal or lateral movement of the said seats. If desired, and as illustrated in Fig. 8 of the drawings, the outer corners of the seats may be also provided with flanges 7.

The members 5 have their upper faces, or rail-receiving portions, flat and smooth, for a suitable distance, as indicated by the numerals 8, and these smooth surfaces are disposed at the opposite ends of the rail seats. The seats 5 are each provided with a centrally arranged longitudinally extending depression or channel 9 which opens to the smooth faces 8, and each of the channels terminates in an enlarged opening 10 which is arranged adjacent one of the ends of each

of the seats. The two members 5 arranged at each of the ends of the tie are disposed in opposite directions; that is, the smooth portions 8 thereof are disposed directly opposite one another, and the enlarged opening 10 of one of the seats is arranged adjacent the end of the tie, while the opening 10 of the second seat is disposed toward the center of the tie. The upper faces of the seats 5 between the smooth portions 8 thereof and the enlarged opening 10 are formed with teeth 11, and adapted to be inserted through the openings 10 are headed members 12, the shanks 13 of which being of a length sufficient to project a suitable distance above the faces of the seats 5 and to snugly engage between the side walls formed by the rectangular channels 9. Each of the rail engaging members 16 and 17 comprises a flat base 18 which has its forward portion upon its lower face formed with transverse teeth 19 which are adapted to co-act with the teeth 11 of the rail seats 5, upon which the members are arranged. The rail engaging members are provided with openings 15, through which the threaded portions 14 of the shanks of the headed members project, and engaging the said threaded projections are nuts 22 which force the teeth 19 into engagement with the teeth 11.

Each of the members 16 and 17 has its base terminating in an abrupt shoulder 20 which is adapted to abut one of the longitudinal edges of the base flanges of one of the rails R, while continuing beyond the said shoulder, the members are integrally formed with flanges 21 which are shaped to agree with the shape of the upper faces of the base flanges of the rails, upon which the said portions 21 are adapted to frictionally contact. The opening 15 is arranged upon the body portion of each of the members 16 or 17, that is, between the shoulder 20 and the outwardly enlarged end of the flange 21, the said ends terminating above the rear series of teeth 19, so that the nut, when screwed entirely home upon the shank of the bolt will not only force the teeth of the said members securely into engagement with the teeth of the rail seats, but will also force the shoulder and flange 21 into tight frictional engagement with the base flanges of the rails. As stated, the teeth 19 are formed upon the face adjacent the shoulder 21, and the smooth portion 18 of the base 24, which extends outwardly of the said teeth provides, what I will term, a tail portion, which is adapted to entirely close the opening 10. The channel proper is of a width corresponding with the width of the enlarged opening 10 and the slot, formed in the upper wall thereof is of a width only sufficient to receive the shank of the headed members 12, and, for convenience, the enlarged portion of the said channel will be designated by the numeral 25, and it is against the upper wall of the said passage 25 that the head of the member 12 contacts when the nut is screwed home upon the shank. It is further to be stated that the heads for the members 12 are of a size sufficient to be snugly inserted through the openings 10 to within the channel or passage 25, so that the said members 12 may be removed from the rail seats or adjusted longitudinally thereof as desired.

In Figs. 5 and 7 I have illustrated the rail having one of its longitudinal edges notched, the notch in the base flange of the said rail being designated by the numeral 29, and the rail securing element 17 is formed between its shoulder 20 and its flange 21 with an integrally formed lug 30 which is adapted to engage within the notch 21, also, in Fig. 5, I have illustrated the rail as provided with angle bars 31 and 32 respectively, the longitudinal edge of the base portion of the bars being provided with a notch 33 which is arranged to register with the notch 29 and to also receive the lug 30 of the member 17. The members 16 and 17 employed in connection with the angle bars or fish plates which are adapted to connect two rail ends, have their shoulders 20 enlarged to agree with the greater thickness provided by the longitudinal edges of the angle bars or fish plates.

As illustrated in Figs. 9 to 11 I provide the tie at each end thereof with a single rail seat 34, in lieu of the two seats arranged at each end of the tie, as heretofore set forth. Each of the seats 34 comprises an upper flat member 35 which is centrally formed with an elongated opening 36 that is adapted to receive a portion of the plastic material from which the tie is formed, to assist in sustaining the said member upon the tie. The seat, to the opposite sides of the opening 36 is provided with longitudinally extending depressions 37—37, which terminate in enlarged openings or depressions 39, the said depressions having their inner walls arranged adjacent to an angular or transverse shoulder 40 provided upon one end of the seat 34. The opposite end of the seat proper terminates in a shoulder 47 which is provided upon a plate 46. The plate 46 is centrally formed with a longitudinally extending web 48 which connects with the outer end wall of the seat proper. It may here be stated that the seat is substantially rectangular in cross section, and the said outer end, adjacent the beveled or inclined wall 40, is provided with a flange 7′, and the side walls 5′ of the said seat terminate in outturned flanges 43, as does the end wall of the seat. The flanges 43 are extended a suitable distance beyond the ends of the side walls 5′, as indicated by the numerals 45, and the web 48 provides the inner walls of the chan-

nels 37 as well as that of the depressions 39. The said side walls have their upper portions, at the juncture with the sides provided by the channels 37 flanged, as are also the inner upper walls of the sides 5, as indicated by the numerals 44, the said flanges adapted to receive the heads 42 of bolt members 55 when the same are passed through the openings 39 to within, what I will term, the passage 41 provided between the outer side walls of the web 48 and the inner walls of the side 5′. The portion of the web arranged beneath the plate 46 is formed with a depression 50 which provides the said sides, as well as the end of the web with feet 51, and the web is centrally formed with elongated slots 52, such arrangement being provided in order to sustain the seat effectively within the tie. It is to be understood that the plastic material does not enter the passages 41, and if desired, the same may have its end closed, or other means may be provided in the process of molding for preventing the said material entering the passages so that the bolts 55 may be readily adjusted longitudinally of the seat. The plate 46 is horizontally straight and provides a bearing for a switch point 53, while the lower flat surface of the face between the shoulders 40 and 47 is adapted to receive a rail R′, the inner longitudinal edges of the base flanges of the same abutting the shoulder 47. The rail sustaining elements are substantially similar to those heretofore described, except that the said elements, which may be designated by the numeral 54, provide angular rail engaging elements 57 which engage the base flange, web and beneath the head of said rail R′, while the flat or body portion 58 of each of said members 54 is provided with an opening 55ª through which extends the threaded stem of the headed bolt member 42. One of these members 42, is, of course, arranged within each of the passages 44, and the body 58 of the rail engaging members is of a greater thickness than the width of the seat, and the openings 55ª thereof are elongated. The outer edge of the body portion of the member 54 is arranged at an inclination, similar to that of the inclined wall 40, and is adapted to be wedged between the rail R′, and the said shoulder 40 and when in the proper adjusted position, the bolt members 41 have their threaded extremities engaged by binding nuts 56.

From the above description, taken in connection with the accompanying drawings, the simplicity of the device, as well as the advantages thereof will, it is thought, be perfectly apparent to those skilled in the art to which such inventions appertain without further detailed description.

Having thus described the invention, what I claim is:

1. In combination with a plastic tie, of rail seats embedded within the tie to reinforce the same, said seats projecting above the face of the tie, the seats being each formed with longitudinal channels which terminate in enlarged openings, a headed member provided with a shank adapted to pass through each of the enlarged openings to bring its head into contact with the upper wall of the passage provided by the channels, and its shank to project through the channel, a rail engaging member comprising an elongated plate terminating in a shoulder and a rail engaging flange projected from the shoulder, said member having an opening for the shank, a nut for the threaded shank, and the base of the rail engaging members being of a length and width to fully close the channel and mouth of the opening, substantially as described.

2. In combination with a plastic tie, of substantially rectangular rail seats embedded within the tie and spaced away from each other, and projecting above the tie, the said seats having longitudinally disposed channels which terminate in enlarged openings, the upper faces of the seats at the opposite sides of the openings being formed with teeth, the seats having each an enlarged passage which is disposed below and which intersects the channel, the smooth surface of the seats adapted to receive a rail, a headed member having a threaded shank adapted to pass through the opening for longitudinal adjustment within the passage, rail engaging members comprising shanks, each of which includes a flat base having an extending tail, the base having teeth which are adapted to co-act with the rail seats, the base members each terminating in a shoulder from which extends a rail engaging flange, the portion of the flange overlying the teeth being enlarged and being provided with an opening for the reception of the shank of the threaded member, and a nut for the shank.

3. The combination with a plastic tie, of a rail seat embedded therein and projecting above the tie, said seat having one of its ends provided with an inclined shoulder, its opposite end formed with an extending plate which provides a straight shoulder, a rail upon the seat and adapted to have one of its longitudinal edges contact with the shoulder provided by the plate, a rail clamp adapted to engage with the opposite faces and base flange of the rail, said clamp having an inclined edge which is adapted to co-act with the inclined shoulder of the seat, and means for adjustably securing the clamp upon the seat and the plate adapted to provide a rest for a pivoted rail.

4. In combination with a plastic tie, of rail seats embedded within the tie and extending above the tie, said seats embodying

each a rectangular member having base flanges and its upper end formed with an outturned flange, the inner wall of the flange being disposed at an angle to the rail-receiving portion of the seat to provide a shoulder, the opposite end of the seat being provided with a right angular shoulder, a rail adapted to abut the right angular shoulder, a wedge-shaped rail engaging member co-acting with the inclined shoulder, said member having its inner face shaped to conform with the side of the rail with which it engages, and adjustable and removable securing elements co-acting with the seat and with the rail engaging member.

5. The combination with a plastic tie, of rail seats embedded within the tie and projecting above the tie, each of the seats having an upper depressed portion upon which the rails rest and contact with one of the shoulders formed by the said depression being angular, the said depressed portion having channels which communicate with openings that are disposed adjacent the angular shoulder, the seat having enlarged passages arranged below but which communicate with the channels, headed members having threaded shanks arranged within the passages and having their shanks extending through the channels, rail engaging members having outer angular ends disposed upon the seat between its inclined shoulder and over the openings and passages, said members having elongated openings through which the shanks pass, and securing members for the projecting portions of the shanks.

6. The combination with a plastic tie, of a rail seat comprising a rectangular metallic body having a flat rail receiving face, a plate formed upon the face and extending centrally from one side thereof, the plate having its ends provided with shoulders, the seat, between the shoulders, having an elongated central opening, and being further provided with passages for the reception of securing elements that are disposed to the opposite sides of the said central opening, the said passages having their outer walls terminating away from the inner ends of the body, the sides and ends of the body of each of the seats being flanged, a web projecting beneath the plate and connected with the end walls of the passages, said web below the plate being dished inwardly to provide the sides with outturned flanges, the dished portion of the web having an elongated opening, adjustable and removable elements for sustaining the web between the shoulders of the seat.

In testimony whereof I affix my signature in presence of two witnesses.

IVES A. MILLER.

Witnesses:

M. HOMER MILLER,

ADAM B. SHAFFER.