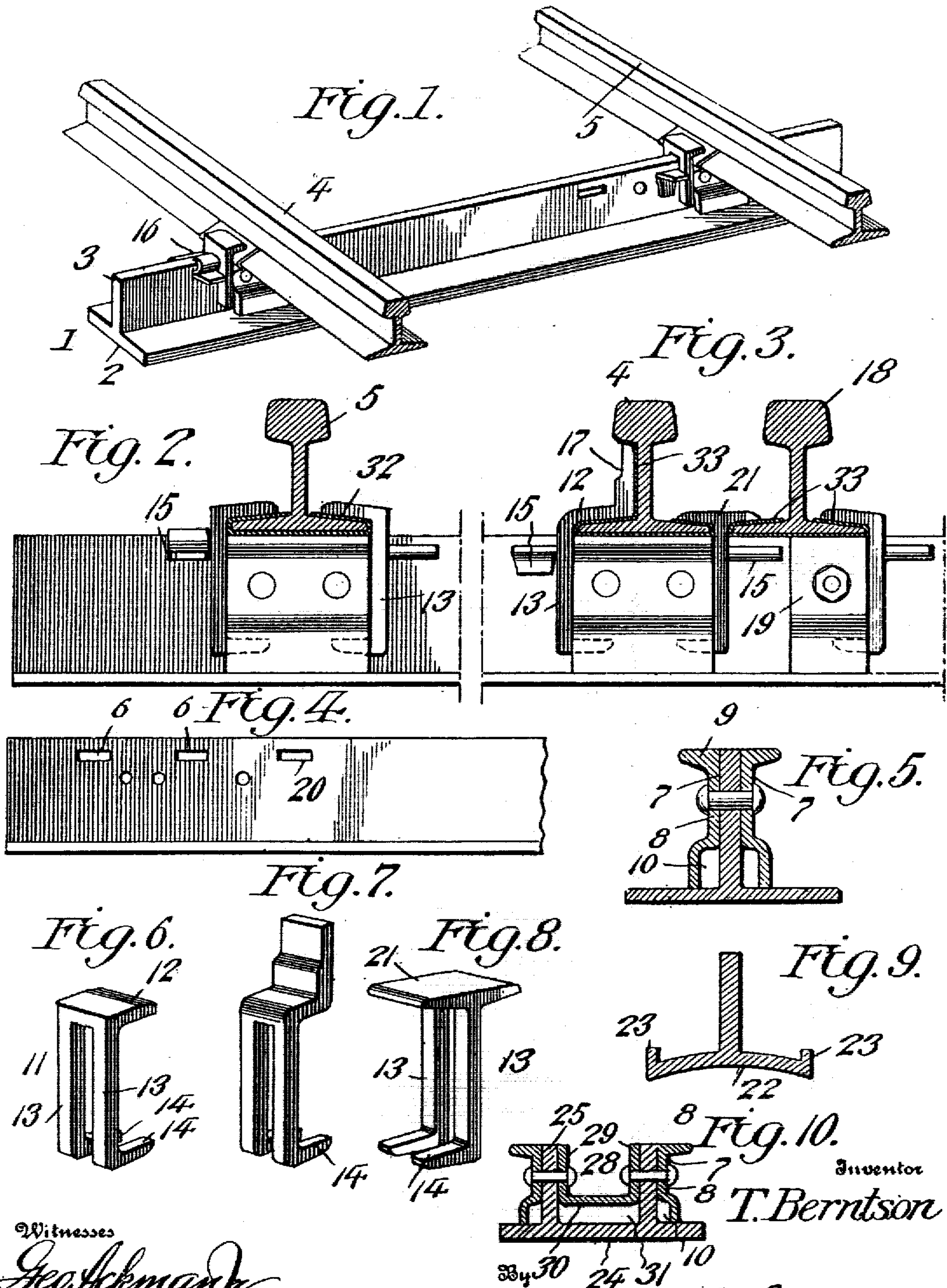


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METALLIC TIE.

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METALLIC TIE.

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To all whom it may concern:

Be it known that I, THOMAS BERNTSON, a citizen of the United States, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented new and useful Improvements in Metallic Ties, of which the following is a specification.

The invention relates to an improvement in railway-ties and in means for securing the rails to said ties.

The main object of the present invention is the production of means whereby the rails may be removably secured to a tie of particular construction, the securing means comprising a minimum number of parts and adapted to fix the rail with relation to the tie against the possibility of accidental disengagement.

Another object of the invention is the production of securing means adapted for ready cooperation with a strip of insulating material, whereby to insulate the rail from the tie and securing means.

Another object of the invention is the production of a metallic tie adapted to be readily supported and held in the road-ballast and of comparatively light weight.

The preferred details of construction of the present invention will be described in the following specification, reference being had particularly to the accompanying drawings, in which—

Figure 1 is a perspective view illustrating my improved tie and securing means, the railroad-rails being shown in place. Fig. 2 is a broken side elevation of the tie and securing means, the rail being shown in section. Fig. 3 is a similar view illustrating the securing means adapted for use in conjunction with a guard-rail. Fig. 4 is a broken side elevation of the tie. Fig. 5 is a transverse section through the tie and the rail-supporting plate secured thereto. Fig. 6 is a perspective of the preferred form of clamping-key. Figs. 7 and 8 are similar views of modified forms of the key. Fig. 9 is a transverse section through a modified form of tie. Fig. 10 is a transverse section through another form of tie, illustrating particularly a modified form of supporting-plate.

Referring to the drawings, wherein like reference-numerals indicate like parts throughout the several views, my improved railroad-tie comprises an inverted-T-shaped rail 1, which in its preferred form has a flat

base 2 and a vertically-extended centrally-arranged web 3. The tie is designed to rest upon its base 2, with the web 3 extending transversely of and supporting the track-rails 4 and 5. The web 3 of the tie near its upper edge is formed with longitudinally-arranged rectangular openings 6, said openings being provided in pairs near the respective ends of the tie and spaced apart a distance slightly greater than that of the base-flange of the rails.

Supporting-plates 7 are secured on each side of the web 3 of the tie intermediate the openings 6, each of said plates comprising a web portion 8, designed to rest in contact with the web of the tie and formed at its upper end in alinement with the upper edge of the web with an enlargement or right-angled projection 9. Near the lower end the plate is bent laterally away from the web of the tie and downwardly in contact with the base of the tie, thereby providing an opening or recess 10 for the reception of a portion of the clamping-keys, as hereinafter described.

It is to be understood that two of the supporting-plates are secured to the web of the tie in transverse alinement thereof and directly beneath the rail, the projections 9 of said supporting-plates forming a comparatively broad bearing for the rail.

11 represents what I term the "clamping-key," comprising a broad head 12, from one edge of which depend spaced arms 13, the lower or free ends of which are bent at approximately right angles to provide lugs 14, extending from the arms in the same direction as the head 12. The lower surface of the head 12 and the upper surface of the lugs 14 are inclined from the horizontal, the former upwardly and the latter downwardly, to provide for the clamping action desired. The arms 13 are spaced apart a sufficient distance to permit the passage therebetween of the web 3 of the tie, so that in use one arm is in contact with each of the respective sides of the web.

In use, assuming the supporting-plates riveted or otherwise secured in proper position on the tie, the rail is positioned upon said plates and the upper edge of the tie and the clamping-keys positioned by straddling their arms on the web of the tie and engaging the under side of the head of the key with the base-flange of the rail, the lugs 14 fitting within the recesses 10, formed between the

lower ends of the supporting-plates and the tie-web. A wedge-pin 15 is then driven into each of the recesses 6, it being understood that said recesses are so spaced as to extend 5 beyond the clamping-keys when the latter are in place. The pins 15 are of the cotter-pin type, and after being properly seated to wedge the keys upon the base-flanges of the rails one or both of the split terminals may 10 be turned to prevent accidental withdrawal of the wedge. By preference, however, the wedge-pin is of such length that the terminal of the upper section of the pin may be turned upward to rest upon the upper edge of the 15 web, as shown at 16 in Fig. 1, thereby positively preventing its accidental withdrawal.

As shown in the drawings, two clamping-keys are used as a securing means for each rail, being positioned on the respective sides 20 thereof and operating in conjunction with the wedging-pins 15 to securely hold the rail against possibility of accidental movement. It will be further noted that each of the clamping-keys snugly embraces the web of 5 the tie, thereby increasing its efficiency as a holding means and reducing the liability of any independent movement of the key.

In Fig. 3 I have illustrated a modified form of clamping-key wherein the head 12 is provided with a vertically-extending portion 17, 30 designed when the key is in place to bear against the web of the rail and terminate approximately in contact with the lower surface of the rail-tread. This form of key provides an added support against possibility of lateral displacement of the rail and is particularly effective for use in curves or the like. It is frequently desirable and necessary in railroad construction to provide an additional or guard rail, as 18, for use in conjunction with the main rail, and I contemplate the adaptation of my securing means to this guard-rail. For this purpose supporting-plates 19, similar in all respects to the plates 7, with the exception that they are of considerably less width, are secured to the tie in position to support said guard-rail. The remote half of the base-flange of the guard-rail is secured by a clamping-key similar to the preferred construction, an additional opening 20 being formed in the web of the tie for the reception of the wedge-pin to cooperate with this key. The clamping-key for use between the main and guard rails in this instance, however, is of modified construction, being adapted to clamp the approximate flanges of both rails in position. To this end the clamping-key, which is otherwise of the construction previously described, is provided with a head 21, extending in both directions beyond the arms 13, thereby affording a projection integral with the key and designed to engage the adjacent base-flanges of the main and guard rails, as clearly shown in Fig. 3. This modified clamping-key is secured by the pre-

viously-described wedge-pin 15, and it is to permit the proper insertion of this pin that the supporting-plates are reduced in width.

In Fig. 9 I have illustrated a modified form of tie, in that the base 22 thereof is concavo- 70 convex in transverse section and has slight vertically-projecting edge flanges 23. This form of tie may in some instances be more readily held in place owing to the additional gripping-surface provided for the ballast or 75 cement filling.

In Fig. 10 an additional form of tie is illustrated, wherein the base 24 is provided with vertically-projecting spaced webs 25, arranged in parallel order and preferably near 80 the side edges of the base. In this instance the outer side of each of the webs 25 is provided with a supporting-plate similar in all respects to the plate 7, while between the webs I arrange a U-shaped supporting-plate 85 28, the arms 29 of which contact with the inner surface of each of the webs, the cross-bar 30, joining said arms, being positioned above the base 24 of the tie to provide the space 31 necessary for the reception of the lugs 14 of 90 the clamping-keys. With this form of tie I prefer to secure the rails by two clamping-keys for each rail arranged diagonally of the tie—that is, the clamping-key on one side of the rail cooperating with one web 25 and the 95 clamping-key on the opposite side of the rail cooperating with the other web. It is to be understood, however, that, if desired, I may use four clamping-keys with each rail, two of said keys cooperating with each of the tie- 100 webs 25.

It is to be particularly noted that the securing means of my invention is readily adapted for cooperating with a suitable insulating-strip to effectively insulate the rails 105 and permit their use as conductors in signaling systems. In the preferred form shown in Fig. 2 the insulating-strip 32 extends around the base-flange of the rail and underlies the head of the clamping-keys. In the 110 modified forms illustrated in Fig. 3 the insulating-strip 33 is arranged beneath the base-flange of the rail and is of such length and width as to extend between the clamping-key and rail wherever necessary, thus completely insulating the rail from metallic con- 115 tact with the tie or securing means and permitting use of the rail as a conductor. When desired to remove the rail, it is only necessary to withdraw one or the other of the 120 wedging-pins and remove the proximate clamping-key, the rail being thereupon readily slipped from under the opposite key.

In the manufacture of the ties the recesses or openings 6 and 20 are to be formed there- 125 in, thereby adapting the ties for guard-rail support, if desired. I also contemplate the securing of the usual supporting-plates 7 to the tie during its manufacture, whereby it is ready for service with the rails by simply se- 130

curing the clamping-keys in place. By preference the supporting-plates 7 are riveted to the tie, an additional opening being provided to permit the securing in place of the guard-rail-supporting plate 19 when desired by bolting or otherwise.

Owing to the inclinations on the under side of the head 12 and upper side of the lugs 14 of the clamping-key, the action of the wedge-pin in setting this key will clamp or wedge the head and lugs onto the rail-flange and against the upper wall of the recess 10, respectively, materially aiding in securing the parts in position.

It will be noted that the various parts of my improved tie and securing means may be readily rolled or made up of rolled material, thereby increasing the strength of the respective parts without adding to their weight.

In securing the rails in place no bolts or spikes are used, and as all parts are interchangeable provision is made against loss of time in setting the rails.

Another important advantage resulting from the construction above described is that I am thereby enabled to alter within reasonable variation the gage of the track—as, for instance, in widening the gage the outer wedge of either one or both of the tracks is reduced to limit the outward movement of the track to the point desired, while the inner gage is increased in width, so that when driven to its seat it will move the clamping-keys and track tightly against the initially-set wedge, thus moving the track to the extent desired. It is understood, of course, that the openings formed in the web of the tie and the supporting-plates are so arranged as to permit this movement. It is therefore obvious that by the use of properly-sized wedged pins the gage of the track may be increased or decreased, as desired, within the limits afforded by the size of the openings 6 and the width of the supporting-plates.

Having thus described the invention, what is claimed as new is—

1. The combination with a railway-tie having a projecting web, of rail-supporting means secured thereto, and rail-securing means adapted to engage the opposite sides of the tie-web and removably engage and be operatively secured in place by the rail-supporting means.

2. The combination with a tie having a projecting web, rail-supporting means secured thereto, and a rail supported thereon, of rail-clamping keys designed to removably engage and be operatively secured in place by the rail-supporting means.

3. The combination with a tie having a projecting web and means secured thereto for supporting the rail, of clamping-keys adapted to engage the rail and removably engage and be operatively secured in place by the

rail-supporting means, and means carried by the tie to engage the keys.

4. The combination with a tie having a projecting web, of clamping-keys designed to embrace the web and engage the rail, and means carried by the tie to removably receive and operatively secure said keys, said means serving to support the rail.

5. The combination with a tie having a projecting web and plates secured on the opposite sides thereof, said plates terminating on a plane with the upper edge of the web and forming with said web edge a rail-support, of clamping-keys arranged to straddle the web and engage the rail and plates, and an insulating-strip inserted between the flange of the rail, the supporting-plates and clamping-keys.

6. The combination with a tie having a projecting web, of supporting-plates secured to said web and terminating in alignment with the upper edge of the web, the lower ends of said plates being offset from the web to provide recesses, and clamping-keys arranged to straddle the web and engage the rails, the lower end of said keys engaging the recesses formed between the supporting-plates and the tie-web.

7. The combination with a tie having a projecting web, of rail-supporting plates secured to the web and terminating coincidently with the upper edge thereof, clamping-keys to straddle the web and engage the rail at the upper end, the lower end of the plates being formed to receive and secure the lower ends of said keys.

8. The combination with a tie having a projecting web, of rail-supporting plates secured to the web and terminating coincidently with the upper edge thereof, clamping-keys to straddle the web and engage the rail at the upper end, the lower end of the plates being formed to receive and secure the lower ends of said keys, and wedging-pins to engage the tie-web and bear against the clamping-keys.

9. The combination with a tie having a base portion and a web projecting centrally therefrom, of supporting-plates secured on opposite sides of the web in transverse alignment, and clamping-keys comprising heads adapted to bear on the rails, depending arms to engage opposite sides of the web, and lugs projecting from said arms and adapted to engage recesses formed in the supporting-plates, and wedge-pins adapted to be inserted through openings in the web and engage both of the arms of the clamping-key.

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

THOMAS BERNTSON.

Witnesses:

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