

C. N. THOMPSON.
RAILWAY TIE.
APPLICATION FILED OCT. 28, 1908.

Patented Sept. 21, 1909.
2 SHEETS—SHEET 1.

934,478.

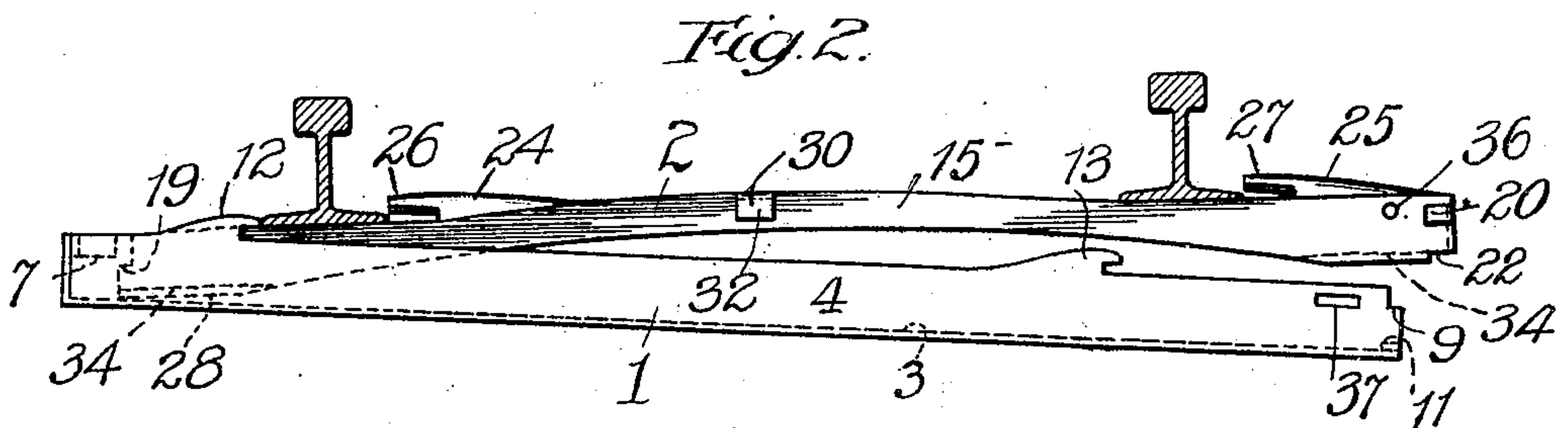
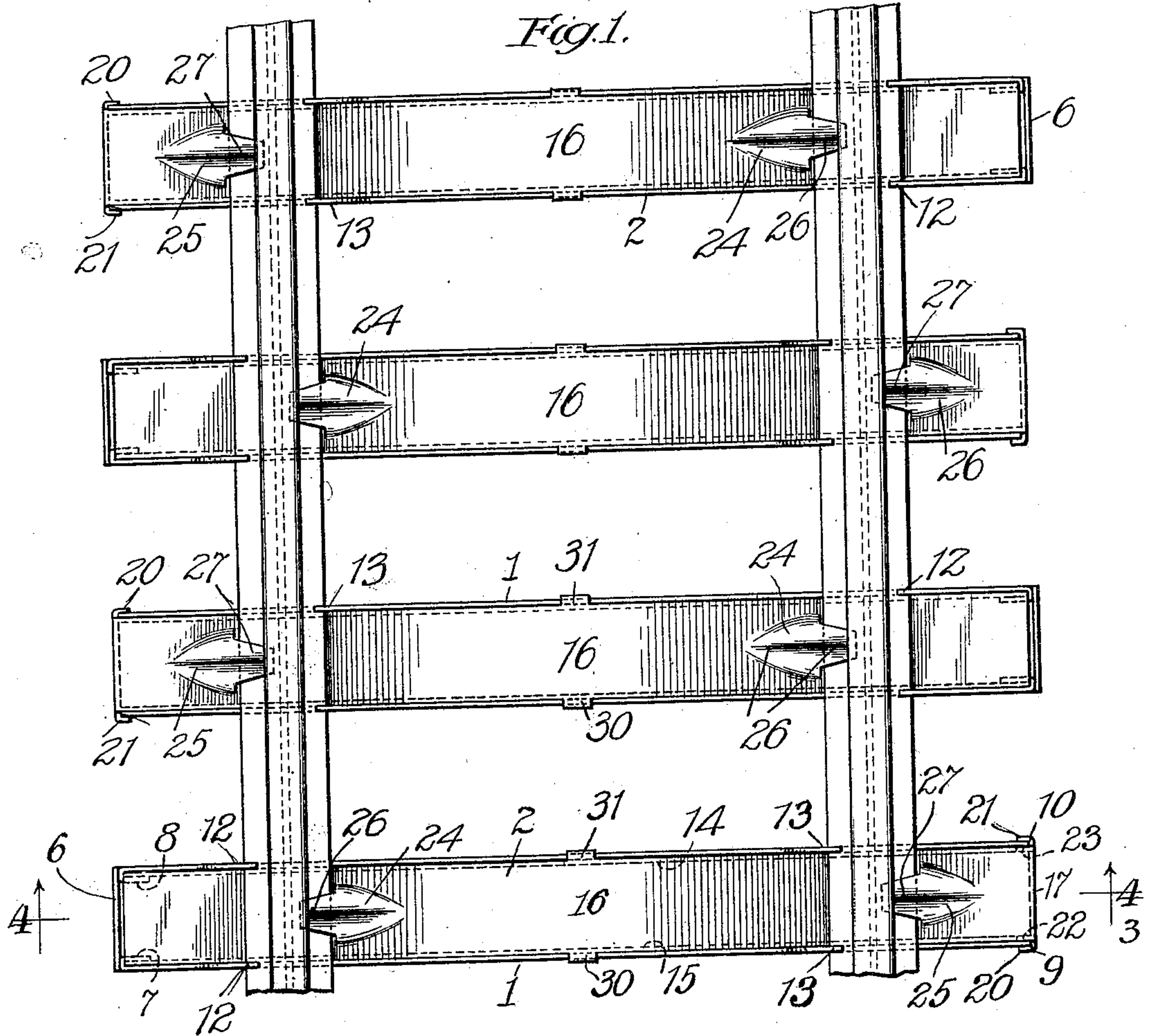


Fig. 3.

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Fig. 4.

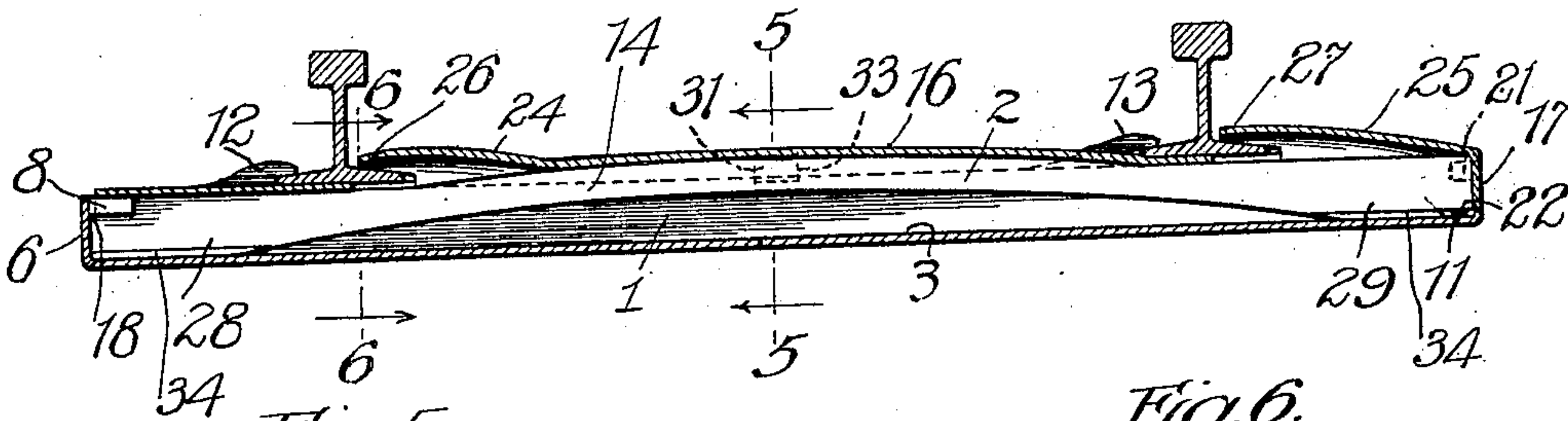


Fig. 5.

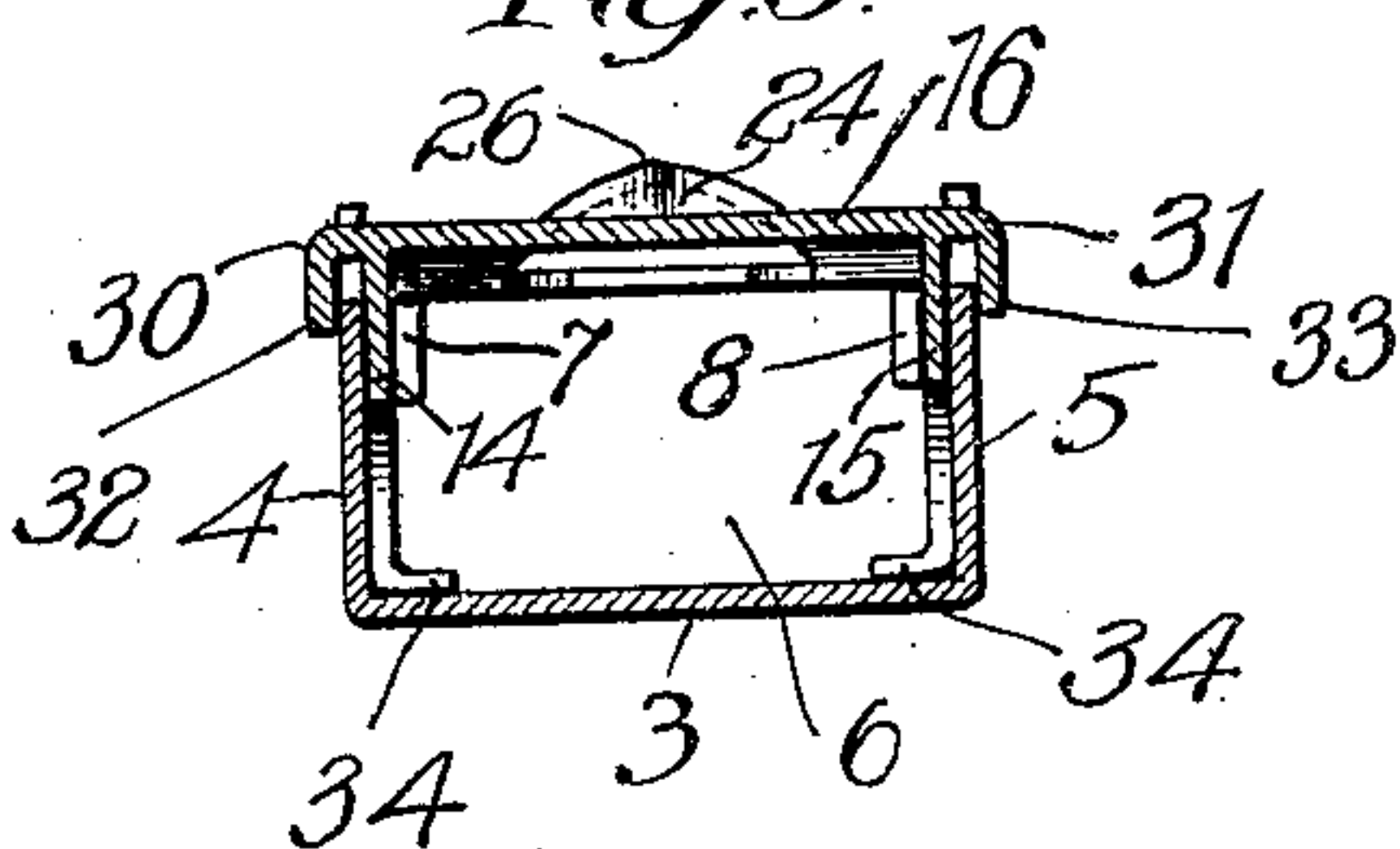


Fig. 6.

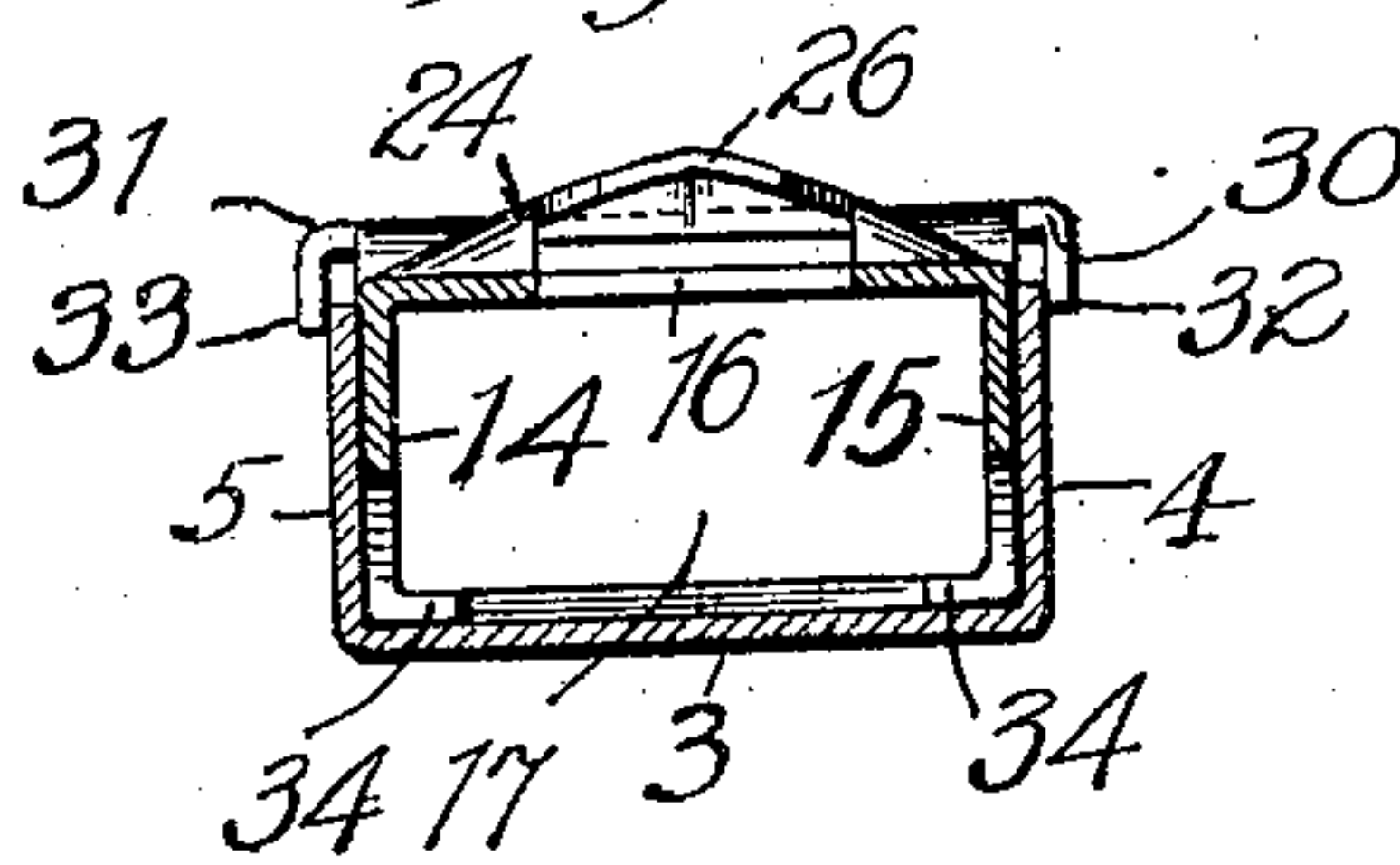


Fig. 7.

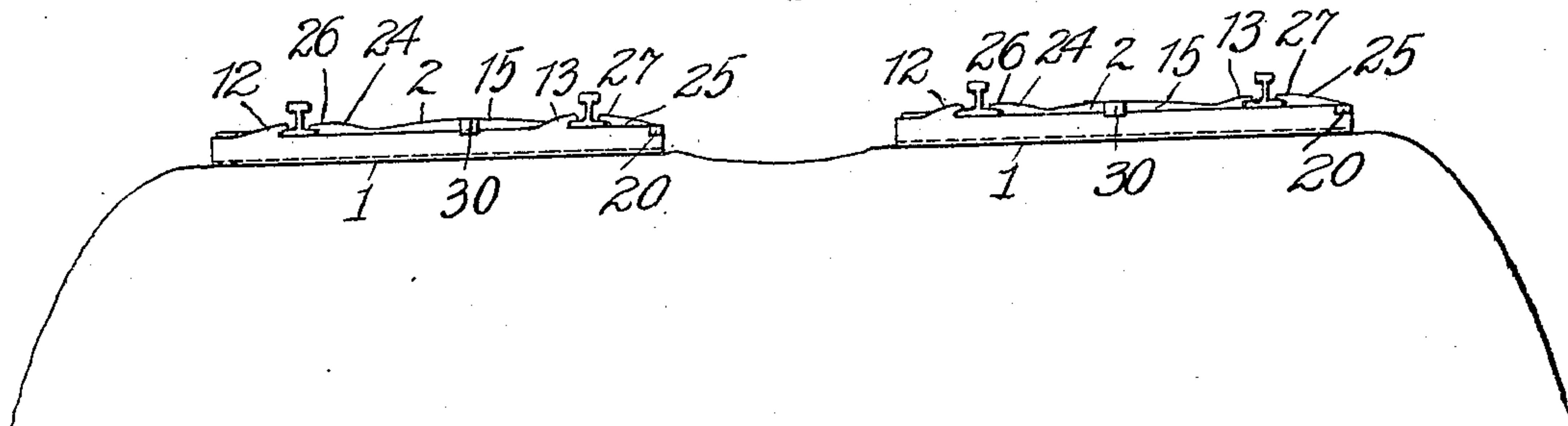
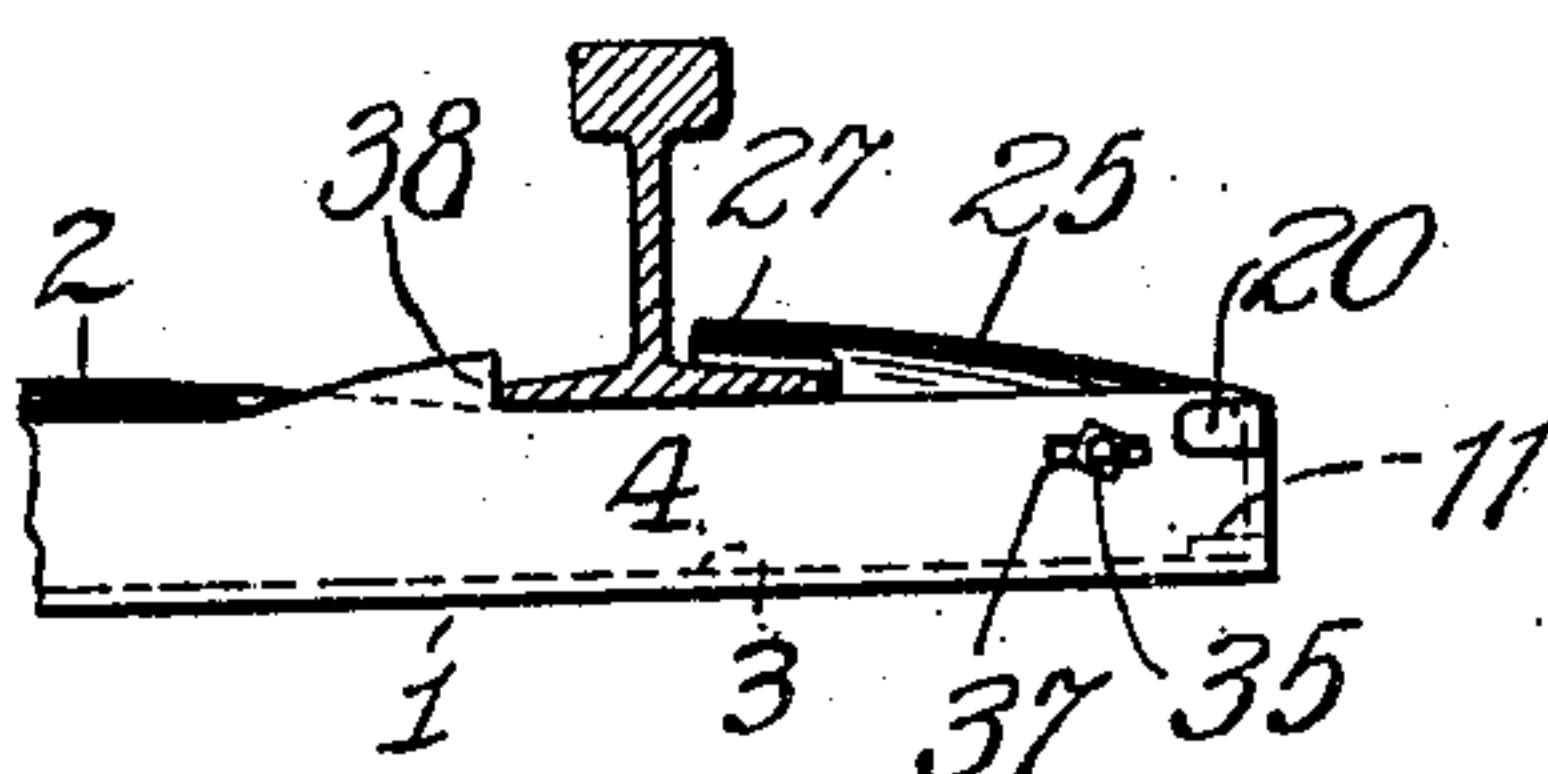


Fig. 8.



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RAILWAY-TIE.

934,478.

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To all whom it may concern:

Be it known that I, CHARLES N. THOMPSON, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Railway-Ties, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to railway ties, particularly to built-up railway ties and incorporates several improved features of construction and arrangement.

The principle involved in the automatic interlocking of the members of the tie is one of the main features of my invention. In some built-up ties of the prior art the several members, after being brought together, must be secured together by special means, such as bolts, which can very readily jar loose after a period of traffic over the rails.

In my arrangement the parts when brought together to form the tie, securely grip the rail and at the same time lock themselves securely in position in such manner as to make it almost impossible for them to become separated by themselves.

My tie is formed of only two members, each formed integral, either of sheet material or by being cast, the members fitting one within the other to form a box-like structure. The part in direct contact with the rail is adjusted with respect to the other part so that the resiliency and elasticity, so necessary in rail beds, is provided. Provision is also made whereby the ties can serve as drainage ducts.

These various features and other features of importance will be brought out in detail in the following description, having reference to the accompanying drawings, in which—

Figure 1 shows a plurality of ties with the rails in place thereon; Fig. 2 is a side view of a tie showing its two members separated a distance; Fig. 3 is a side view showing the members interlocked; Fig. 4 is a sectional view taken on plane 4—4, Fig. 1; Fig. 5 is a sectional view taken on plane 5—5, Fig. 4; Fig. 6 is a sectional view taken on plane 6—6, Fig. 4; Fig. 7 is a sectional view of a road bed showing double track and the manner in which the improved ties

will drain the road bed, and Fig. 8 is a view of the end of the tie showing a modified construction.

The tie comprises the outer member 1 and the inner member 2, forming a box-like structure when brought together. The member 1 has the base 3, the side walls 4 and 5 and the end wall 6. At the end of the side walls 4 and 5 and just within the end wall 6, locking hooks 7 and 8 extend inwardly. At the other end of the side walls the upper parts are cut away to form the shoulders 9 and 10. At this same end the base 3 primarily extends a distance beyond the side walls 4 and 5 and is turned back against the base 3 to form an interlocking detent 11. Two pairs of retaining hooks 12, 12, 13, 13, extend upwardly from the side walls 4 and 5, one pair at each end of the part 1, the hooks extending all in the same direction. The inner member 2 has the side walls 14, 15, the top wall 16 and the end wall 17. The side walls 14 and 15 at one end engage in the hooks 8 and 7 on the lower member 1 when the members are brought together, and the lower sections of the ends 14 and 15 are continued a distance to form retaining extensions 18 and 19 for engaging under the bases of the hooks 8 and 7. At the other ends of the side walls 14 and 15, the top section is turned back to form retaining hooks 20 and 21 which receive the shoulders 9 and 10 when the members are brought together. The lower edges of the walls 14 and 15 are cut away to leave shoulders 22, 23 which engage against the inner edge of the detent 11 when the members are brought together. Therefore, when the members are brought together, the shoulders 22, 23 engage with the detent 11 to lock the members against relative longitudinal movement in one direction, and the hooks 7 and 8 at the other end of the lower member engaging the ends of the inner member, prevent longitudinal movement of the members in the opposite direction, while the engagement of the extensions 18 and 19 with the hooks 8 and 7 prevent direct separation of the members at this end. When the members are together, the end walls 6 and 17 are at opposite ends of the tie and ballast may be tamped against these walls to anchor the tie against longitudinal displacement. In order to again separate the members, force must be applied

to first lift the inner member with reference to the lower member to raise the shoulders 22, 23 clear of the detent 11, whereupon the members may be slid out of engagement with each other. This separation can be readily accomplished by inserting a pinch bar between the edge of one of the end walls and the adjacent wall of the other member. Formed in the top wall 16 of the inner member, are two tongues 24 and 25, extending in the same direction. Hooks 12 and 13 extend in an opposite direction and cooperate with the tongues 24 and 25, respectively, to receive and hold the flanges of the two rails of the track. These tongues must be given great strength, and where the members are formed of sheet material, the tongues are stamped therefrom and reinforcing beads or ridges 26, 27 are formed in the material at the tongue, these beads or ridges extending across the entire top of the inner member, as best shown in Figs. 5 and 6.

In order to afford the resiliency and elasticity necessary in track construction, the inner member is constructed to engage the outer member only along its end sections 28 and 29, the inner sections of the edges of the side being cut away, the inner members having therefore the characteristics of a spring arch. When the members are together, the top of the inner member should extend a distance above the walls of the outer member so that the inner member, which is in direct engagement with the rails, can spring downwardly when rolling stock passes over the rails. When such weight is placed on the rails, the greatest flexure will be at the center of the inner member, and to prevent excessive flexure, stop lugs 30 and 31 are formed at the sides of the inner member at the center thereof, which lugs engage the top edges of the side walls 4 and 5 of the outer member to prevent excessive flexure. These lugs 30 and 31 can also have the downwardly extending ends 32 and 33, as best shown in Figs. 5 and 6, for engaging the sides of the walls 4 and 5, thereby preventing spreading of the outer member at this point. The end sections 28 and 29 have slight movement during flexure of the inner member, and to prevent cutting of the outer member, the edges of the end sections are turned in to form bearing flanges 34.

When the ties are to be applied to the rails, the tie members are separated a distance sufficient to allow the rails to pass between the ends of the hooks and the tongues to engage the top of the inner member. The inner member is then pushed toward its locking position in the outer member and the rail flanges are received by the locking tongues and forced at their other edges under the hooks 12 and 13, and these hooks being tapered upward slightly, as shown, the engagement of the rail flanges

therewith will cause the two members of the tie to be drawn together so that when the shoulders 22 and 23 pass beyond the detent 11, the two members will be brought intimately together and the shoulders 22 and 23 will lock behind the detent 11. When the members are thus brought together, the inner member is also sprung slightly and this spring will act to snap the ends 22 and 23 intimately against the lower wall 3 of the outer member and will tend to maintain this locking engagement. As before explained, the hooks 7 and 8 serve to hold the members together at the other end of the tie. As additional means for preventing direct separation of the members at the detent end, a bolt 35 may be applied through the holes 36 in the side walls 14 and 15, and through the slots 37 in the adjacent side walls of the lower member, the slots being employed so that longitudinal adjustment of the members is possible, such longitudinal adjustment being sometimes required to cause the members to more firmly clutch the rail flanges. Instead of the single bolt 35 shown, individual bolts could also be used.

Each of the members with all its parts is a unitary structure, preferably formed of sheet metal, although the parts could be in the form of integral castings. As has been shown, the parts can very easily and readily be brought together to engage the rail, and after such engagement the parts automatically interlock and grip and lock the rails in place, and the members cannot be separated until considerable force is applied to first force the members apart at the detent end. The spring of the inner member is sufficient to hold the members in locking engagement at this detent end.

The ties may be arranged with the tongues all pointing in the same direction, or may be arranged, as shown in Fig. 1, with the tongues of alternate ties pointing in the opposite direction. This alternate arrangement causes the gripping of the rail to be more equalized. In Fig. 7 is shown a modified construction, the ends of the hooks 12 and 13 being omitted to leave mere abutments 38 which would serve only to gage the rails but not to hold them against the tie. The tongues would then be the sole means for holding the rails against the tie, and the alternate arrangement shown in Fig. 1 had therefore best be used in order that the rails be clamped at both sides of their flanges.

On roadbeds supporting more than one track, drainage ditches are usually formed between the tracks, as illustrated in Fig. 7, and where the ties are solid the ballast between ties is dug away to provide drainage paths for draining the water from the ditches to the sides of the roadbed. The

ties of my invention are hollow and by having openings through the end walls or by omitting them, the tie itself forms a drainage channel. At suitable intervals ties without end walls could be placed, or the end walls of all the ties could have drainage openings.

As has been clearly shown, the railway tie of my invention possesses many important and useful features, while at the same time the tie has a minimum number of parts whose construction is very economical and simple and whose operation and cooperation are entirely automatic.

I desire to secure the following claims by Letters Patent:

1. In a railway tie, the combination of two members, gripping means on said members, and interlocking means for the members, rails associated with the tie being automatically gripped and the tie members being automatically interlocked and retained both longitudinally and laterally when said members are brought together.

2. In a railway tie, the combination of two members, rail gripping means controlled by the members, and means whereby said members become automatically locked against separation both longitudinally and laterally after having been brought into position to engage the rail gripping means with rails to be supported by said tie.

3. A railway tie composed of only two members adapted when brought together to grip rails and to become automatically interlocked and retained both longitudinally and laterally in gripping position.

4. A railway tie composed of two members adapted to become automatically locked and retained together both longitudinally and laterally, clamping extensions on said members cooperating to grip the rails when the members are brought into interlocking position.

5. A hollow rectangular metallic railway tie formed of two pieces, locking means for locking the pieces together, and gripping means on the pieces for gripping rails, the act of bringing the pieces together to form the tie automatically causing the rail to be gripped by the gripping mechanism and the pieces to be interlocked by the locking mechanism.

6. A railway tie composed of two pieces adapted to telescope together, gripping members on each of the pieces, and interlocking means on the pieces, said gripping means and interlocking means automatically becoming effective as the pieces are telescoped into final position to form the tie.

7. A metallic railway tie composed of two channel-shaped integral pieces fitting one within the other, interlocking means formed by parts of the pieces for automatically locking the pieces together after said pieces have

been brought into position to form the tie, locking hooks on one of the pieces, locking tongues on the other piece, said hooks and tongues cooperating to grip the rail flanges when the pieces are brought together to form the tie.

8. In a railway tie, the combination of two members adapted to be moved longitudinally into engagement with each other to form the tie, locking means brought automatically into action when the members are slid together to automatically lock the members against longitudinal separation, gripping extensions on one of the members, gripping extensions on the other member, said gripping extensions cooperating when the members are brought together to grip the flanges of rails to be supported by the tie, said gripping extensions tending to lock the members against direct separation.

9. In a railway tie, the combination of a channel-shaped lower member whose sides extend upwardly, a companion channel-shaped member whose sides extend downwardly and which fits into the lower member whereby said members form a hollow rectangular tie, hook mechanism at the end of one member for engaging the end of the other member when said members are slid together in longitudinal direction, a locking detent at the other end of one of the members for engaging the other end of the other member when said members have been slid into position to form the tie whereby said members are locked against separation in a longitudinal direction, gripping hooks extending upwardly from the sides of the lower member, and locking tongues extending from the inner member for cooperating with the gripping hooks to grip the flanges of rails to be supported by the tie.

10. In a railway tie, the combination of a rectangular channel-shaped outer member having its sides extending upwardly, a rectangular channel-shaped inner member having its sides extending downwardly adapted to telescope into the outer member to form therewith a hollow-rectangular tie, the sides at one end of the outer member being turned inwardly to form hooks for receiving the sides of the inner member when said members are brought together, extensions from the ends of the inner member also engaged by said hooks, said hooks and extensions cooperating to lock said members together at said end, a detent ridge at the other end of the outer member over which the side walls at the other end of the inner member pass and behind which detent said walls drop whereby the inner member is automatically locked against longitudinal movement to be separated from the outer member, gripping hooks extending from the side walls of the outer member, locking tongues extending from the top wall of the inner member, said

tongues and hooks being brought into gripping connection with the rails to be supported when the tie members are slid together and interlocked to form the tie.

5 11. In a railway tie, the combination of an outer channel-shaped member formed entire from sheet material and having its side walls extending upwardly, a channel-shaped inner member also formed entire of sheet
10 material and having its side walls extending downwardly, said inner member being adapted to be slid into the outer member to form therewith a hollow rectangular tie, locking extensions at one end of the mem-
15 bers for locking the members together at said end when said members have been slid together, a detent ridge at the other end of one of the members to be engaged by the adjacent end of the other member to
20 automatically lock said members against longitudinal separation after said members have been brought into final position to form the tie, gripping hooks formed at the upper edges of the outer member side
25 walls, gripping tongues punched from the top wall of the inner member, said hooks and tongues cooperating to grip the flanges of rails to be supported when the tie members are brought into position to form the
30 tie.

12. In a railway tie, the combination of an outer member for engaging the roadbed, an inner resilient member for receiving the rails, and gripping mechanism automatically
35 brought into gripping engagement with rails to be supported when said tie members are brought together to form the tie.

13. In a railway tie, the combination of a member for directly receiving the rails to be
40 supported said member being supported only at or near its ends, locking tongues on said member for engaging a flange of the rails to be supported, an associate member for receiving the first member, and gripping hooks on
45 said receiving member for engaging the other flange of the rails.

14. In a railway tie, the combination of an outer channel-shaped member for engaging the roadbed and having its sides extending
50 upwardly, a channel-shaped inner member for receiving the rails to be supported, said inner member fitting within the outer member and having its sides extending downwardly, said inner member being arched to
55 afford resiliency, gripping means on the outer member, and gripping means on the inner member for gripping the rails when the tie members are brought together.

15. In a railway tie, the combination of a
60 channel-shaped outer member having its sides extending upwardly, a channel-shaped inner member for engaging within the outer member and having its sides extending downwardly, said inner member being arched and
65 supported only at its ends by the outer mem-

ber, gripping extensions on the outer member, gripping extensions on the inner member, said gripping extensions cooperating to secure the rails to the inner member when
70 said members are brought together, and interlocking mechanism for automatically locking said members together after gripping of the rails.

16. A railway tie composed of an inner arched member for receiving rails to be sup-
75 ported and an outer member for engaging the roadway to form a support for the arched member, gripping extensions on the arched member and gripping extensions on the outer member, said gripping extensions cooperating
80 to grip the rails when the arched member is brought into position on the outer member.

17. A railway tie composed of an inner arched member for receiving rails to be sup-
85 ported and an outer member for engaging the roadway to form a support for the arched member, gripping extensions on the arched member and gripping extensions on the outer member, said gripping extensions cooperating
90 to grip the rails when the arched member is brought into position on the outer member, and interlocking means for automatically locking said member in gripping position.
95

18. In a railway tie, an outer supporting member for engaging the roadway, an inner arched member for engaging at its ends with the supporting member, gripping extensions
100 on said arched member, gripping extensions on the supporting member, said gripping extensions cooperating to grip the flanges of rails laid on the arched member when said members are brought to final relative position, and means for limiting the flexure of
105 the arched member.

19. In a railway tie, an outer supporting member for engaging the roadway, an inner arched member for engaging at its ends with the supporting member, gripping extensions
110 on said arched member, gripping extensions on the supporting member, said gripping extensions cooperating to grip the flanges of rails laid on the arched member when said members are brought to final relative position, locking means forming part of the
115 members for automatically interlocking said members when they have been brought into final position to grip the rails, and means for limiting the flexure of the arched member.
120

20. In a railway tie, the combination of a rectangular metallic channel-shaped outer member having its sides extending upwardly, an inner metallic channel-shaped member
125 having its sides extending downwardly, the top of said inner member being above the sides of the outer member, the inner part of the side walls of the inner member being cut away so that said inner member engages
130 only at or near its ends with the outer mem-

ber, and gripping means rendered effective when the tie members are brought together to grip rails placed on the inner member.

21. In a railway tie, the combination of a 5 rectangular metallic channel-shaped outer member having its sides extending upwardly, an inner metallic channel-shaped member having its sides extending downwardly, the 10 top of said inner member being above the sides of the outer member, the inner part of the side walls of the inner member being cut away so that said inner member engages only at or near its ends with the outer member, gripping means rendered effective when 15 the tie members are brought together to grip rails placed on the inner member, and stops extending from the inner member for engaging the side walls of the outer member to limit the flexure of the inner member.

22. In a railway tie, the combination of a 20 member supported at or near its ends by a second member, such supported member adapted to act as a support for both rails of the track, means for attaching said members 25 to each other to allow movement with respect to each other due to flexure of the rail supporting member.

23. In a railway tie, the combination of a 30 member supported at or near its ends by a second member, such supported member adapted to act as a support for both rails of the track, means for attaching said members to each other to allow movement with re-

spect to each other due to flexure of the rail supporting member, and means for clamping 35 the rails to the members of the tie.

24. In a railway tie, the combination of a trough shaped supporting member, one end closed and the other open, and an inverted trough shaped rail supporting member en- 40 gaging within the supporting member, also having one end open and the other closed, the closed end of one member closing the open end of the other member when the members are brought together. 45

25. In a railway tie, the combination of two members, gripping means on said members, and interlocking means for the members, rails associated with the tie being 50 automatically gripped and the tie members being automatically interlocked when said members are brought together and end abutment walls on said members.

26. In combination, a rectangular metallic member having three sides and a base, a com- 55 panion rectangular metallic member having three sides and a base, said members fitting one within the other to form a hollow inclosed rectangular railway tie.

In witness whereof, I hereunto subscribe 60 my name this 12th day of October A. D. 1908.

CHARLES N. THOMPSON.

Witnesses:

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FRANK J. THELEN.