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A. C. SHIVES

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METALLIC RAILROAD TIE

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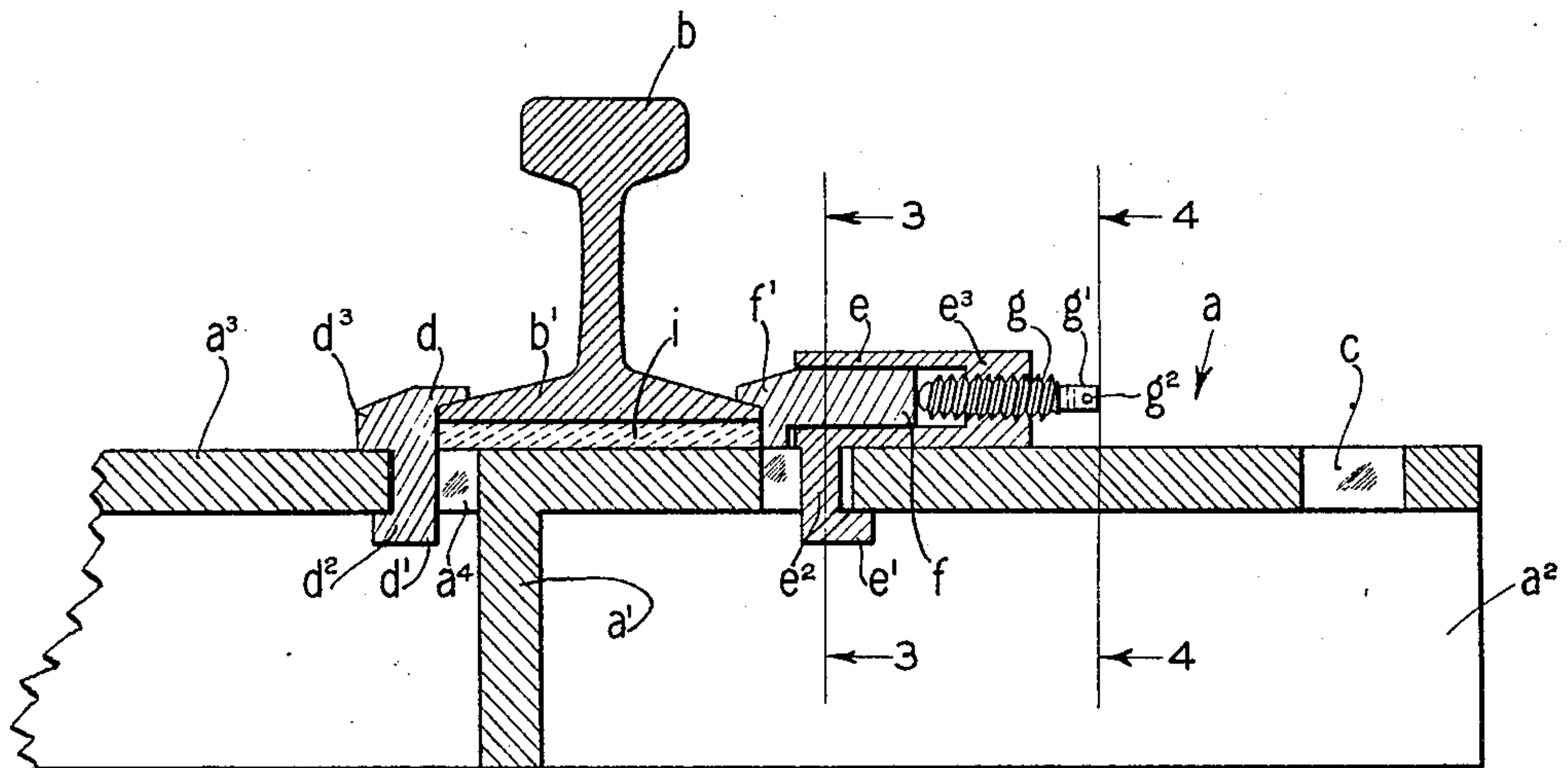


Fig. 1

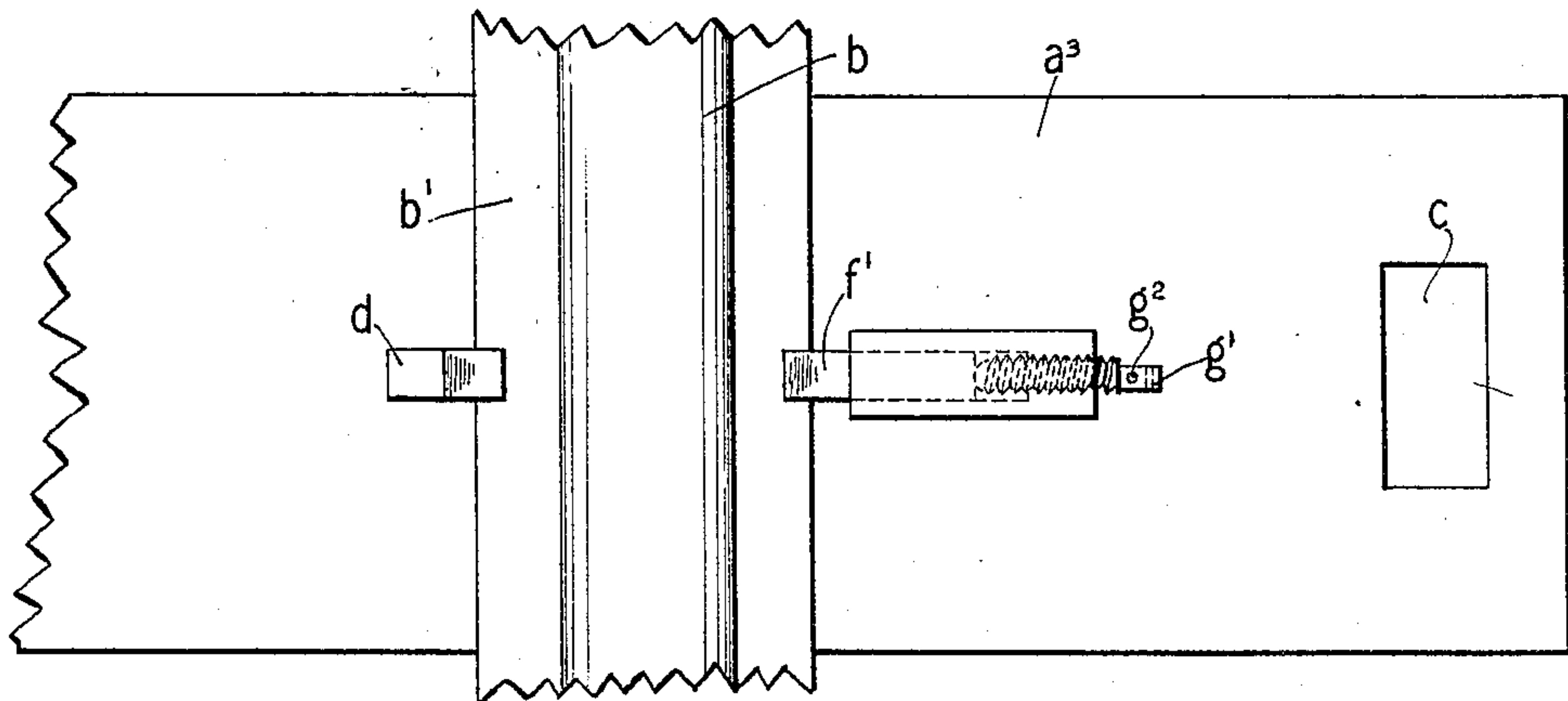


Fig. 2

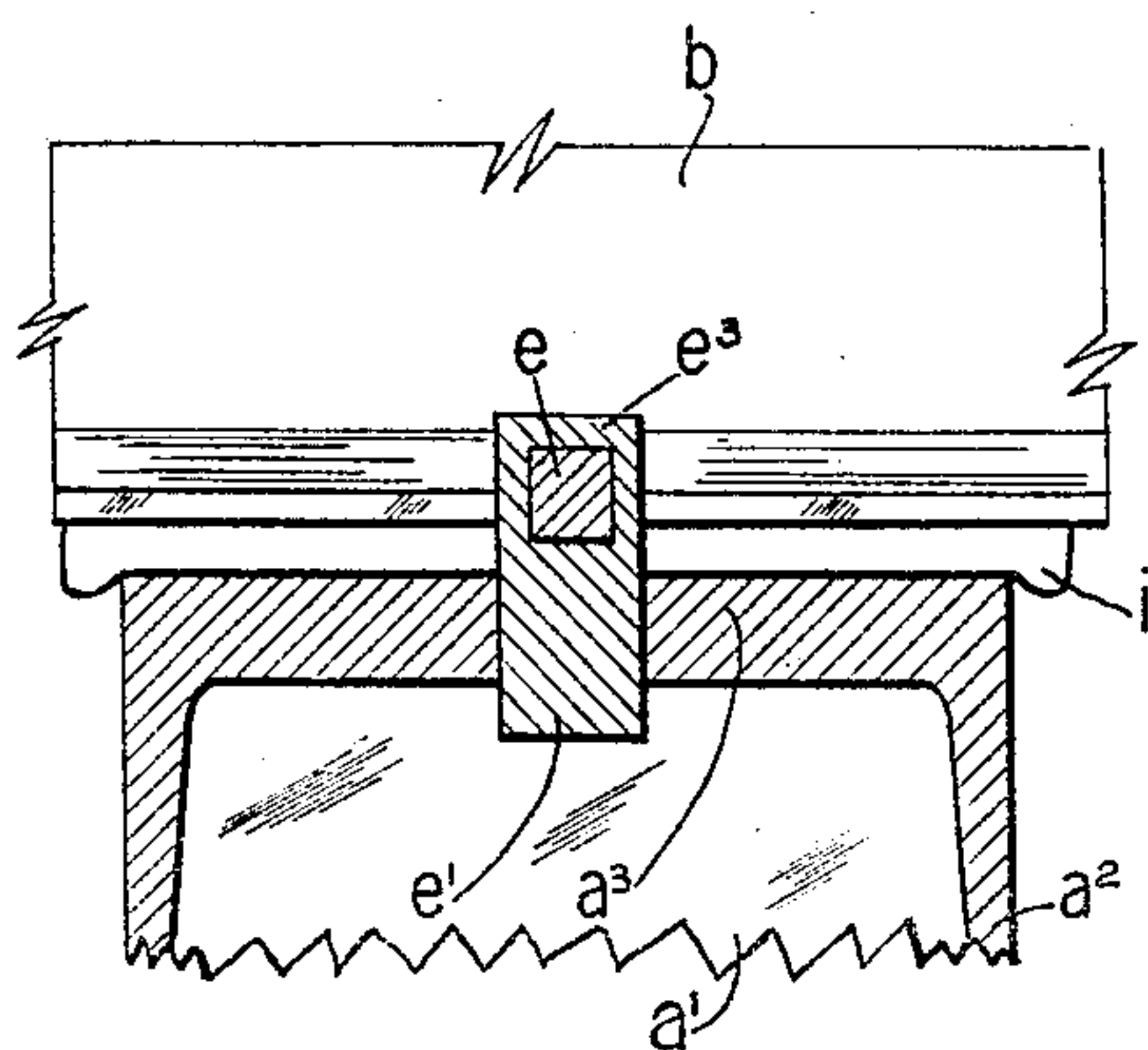


Fig. 3

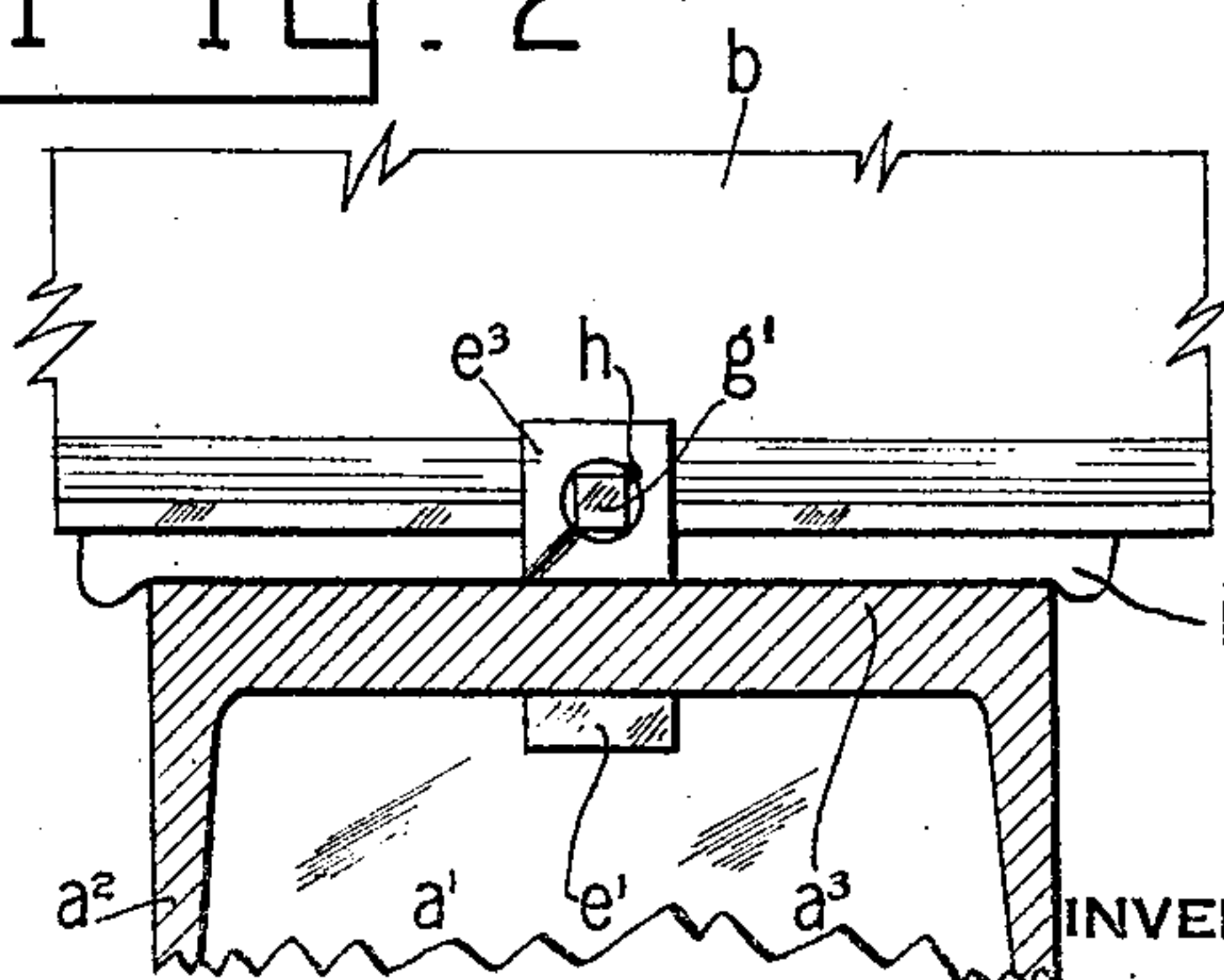


Fig. 4

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METALLIC RAILROAD TIE

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The object of my invention is to provide a metallic railroad tie particularly adapted to be manufactured inexpensively, adapted to be laid and maintained economically and efficiently, and adapted to provide a firm and secure foundation for the rails.

A more specific object of my invention is to provide a tie, the main portion or body of which is adapted to be made of a rolled section with the lugs or securing devices for the rails removable therefrom, so as to be made of forged or stamped elements interchangeable with each other and which devices are adapted to be quickly though firmly secured to the rail.

Specific details of construction and the mode of operation are hereinafter described with reference to the accompanying drawing, in which:

Fig. 1 is a longitudinal section thru a metallic railroad tie showing rails in place thereon;

Fig. 2 is a fragmentary plan view thereof;

Fig. 3 is a transverse section taken thru one of the adjustable securing lugs, taken on the line 3—3 in Fig. 1; and

Fig. 4 is a transverse section taken on the line 4—4 in Fig. 1.

My improved metallic railroad tie comprises an elongated body *a*, which is formed preferably of a channel section of appropriate size and thickness to secure a strong support for the rails *b*, and one which is sufficiently sturdy to prevent distortion under load conditions. Directly under the rail or adjacent thereto the body is strengthened by transverse ribs *a'*, which serve in the main to prevent the dependent side flanges *a2* from spreading outwardly under the influence of the load carried by the rails.

Such strengthening ribs *a'* preferably depend downwardly to a degree similar to the side flanges *a2* and are also integral with the body and perform the further function of providing a partition on the under surface of the horizontal section *a3* extending downwardly and limiting the portion of the rail to be tamped. That is, it is preferable that roadbed under the ends of the ties and the portions under the rails be tamped very solid,

but that the middle portions be relatively soft to prevent the formation of a central ridge. The ribs *a2* thus form pockets or chambers, open at their ends, which limit the lateral movement of the solidly tamped material. The ribs *a'* prevent lateral displacement. The depending flanges *a2* being forced into the ground prevent creeping of the rails, preventing them from being shifted out of alinement with each other. The standard rectangular wooden tie now commonly used becomes moved out of alinement more quickly than the tie embodying my invention, because the depending flanges being forced into the ground must displace the earth which is already set, while it is common practice to fill in between the wooden ties with ballast or other added materials.

At the ends of the ties I provide hand holds or grips *c*, sufficient material being left between said holes and ends of the ties only to provide a convenient grip. The holes are elongated sufficiently so that a man may insert his hand thru such holes to accomplish the desired purpose.

Fixed or set lugs *d* are provided and extend thru slotted holes formed adjacent the rail seats. The under surface of each of such lugs is formed into an L-shaped head *d'* of substantially the same width as the holes *a4* in the horizontal section of the tie. The shanks *d2* are of substantially the same width, but of lesser breadth so that the underhanging portion of the L-shaped head is adapted to engage the under surface of the channel section to prevent said lugs from being lifted from place when they assume the position shown in Fig. 1. The upper portion of such lugs is formed into a T-shaped head *d3* of greater breadth and preferably greater width than the remainder, so that it is impossible for the head *d3* to pass thru the aperture *a4*. The portion of such head facing the rail *b* is made to conform to the edge portion of the rail base *b'* and such portion of the head *d3* is adapted to overlies and engage said rail base, not only on its marginal edge, but upon the upper face of such base.

Opposing such fixed lugs *d* are adjustable lugs *e*, the lower portion *e'* and the shank

portion *e2* being similar in form to the fixed lugs *d* previously described. Instead of a T-shaped head, however, such lugs *e* are provided with a longitudinally-extending sleeve *e3* in which is movably mounted a bolt *f*, the end *f'* of which is formed to engage the marginal portion of the rail base *b'*, as well as to overlie the face thereof in a manner similar to the structure and function of the head *d3*. The bolt *f* and the bore of the sleeve *e3* are preferably non-circular in section, so as to prevent the bolt *f* from rotating in said sleeve.

Engaging said bolt and forming means to move the latter laterally in the sleeve is a threaded screw element *g* threaded in the end of the sleeve *e3*. The end of such bolt *g* is squared as at *g'* and is provided with bisecting but unlined holes *g2* extending diametrically thru said screw element. The squared end *g'* serves as a means by which a wrench can be secured to the screw element to move the bolt into engagement with the rail base. The holes *g2* serve as devices by which additional pressure can be applied to such screw element for forcing said bolt more tightly into engagement with said rail base. When the bolt is tightly in engagement with the rail base, a cotter key or pin *h*, as is shown in Fig. 4, can be passed thru such screw element and engage with the upper surface of the horizontal section *a3* to prevent inadvertent rotation of said screw element which would serve to loosen the engagement between the bolt *f* and the rail base *b'*.

The apertures *a4* thru which the lugs *d* and *e* extend are of a length exceeding but slightly the length of the L-shaped heads *d'* and *e'* and are of a width exceeding but slightly the thickness of the shank portions thereof and such apertures and shanks preferably are non-circular to prevent turning of said lugs while in said apertures. The portion of such horizontal section lying between such apertures is slightly less than the width of such rail base, being as closely as possible the width of such rail base plus the degree to which the lugs *d* are shifted laterally when being moved into adjusted position, as is apparent in Fig. 1 of the drawing. The portions *d'* and *e'* both extend outwardly away from the rail to resist the opposed forces exerted upon the rail and resisted by said lugs.

As is apparent, with the lugs removed said metallic tie interposes no laterally-extending member except the ribs *a'*, which would prevent the tie from being removed for repair or replacement after the rail has been lifted upwardly sufficiently to prevent the withdrawal of said tie and the whole is designed to provide a convenient, inexpensive, efficient and sturdy device, not only with regard to first cost, but also with regard to maintenance.

Lying under the rails and separating them

from the ties are resilient pads *i*, preferably made of rubber. These pads serve the primary purpose of cushioning the rails and eliminating a metal-to-metal contact. They serve a further purpose in that their resiliency serves as a compression member resisting the clamping action of the lugs and sufficient thickness and resiliency is provided in said pads so that when the lugs are seated tightly in place that said pads are under compression. Said pads are substantially as wide as the base portion of the rails, but are substantially longer than the width of a tie and thus when under compression the ends of said pads extend over the sides of the ties and downwardly with respect thereto and thus form bulbous flanges, which tend to prevent said pads from slipping laterally on the ties.

I claim:

1. A metallic railroad tie comprising an elongated body including a relatively broad horizontal section, means for securing rails to said tie, said securing means comprising sets of elements, each set comprising a plurality of opposed lugs detachably secured to the horizontal section of said body, each of said lugs comprising a shank adapted to extend thru said horizontal section, a base projecting laterally from said shank and adapted to engage the under face of said section and a head adapted to engage and to overlie the base portion of a rail, one lug of each set being fixed laterally and the other provided with lateral adjusting means comprising a sleeve and a bolt movably mounted therein.

2. A metallic railroad tie comprising an elongated body including a relatively broad horizontal section, means for securing rails to said tie, said securing means comprising sets of elements, each set comprising a plurality of opposed lugs detachably secured to the horizontal section of said body, each of said lugs comprising a shank adapted to extend thru said horizontal section, a base projecting laterally from said shank and adapted to engage the under face of said section and a head adapted to engage and to overlie the base portion of a rail, one lug of each set being fixed laterally and the other provided with lateral adjusting means comprising a sleeve and a bolt movably mounted therein, means adapted to move said bolt longitudinally of said sleeve into and out of engaging position with a rail base.

3. In combination with a pair of rails extending transversely of a metallic railroad tie comprising an elongated body including a relatively broad horizontal section, resilient rail seats spacing said rails from the tie, said seats extending transversely of the tie and beyond the edges thereof thereby adapted to engage the latter to prevent displacement of said seats.

4. In combination with a pair of rails ex-

tending transversely of a metallic railroad tie comprising an elongated body including a relatively broad horizontal section, resilient rail seats spacing said rails from the tie, said
5 seats extending transversely of the tie and beyond the edges thereof thereby adapted to engage the latter to prevent displacement of said seats, means for securing the rails to said tie and to compress said resilient rail seats to
10 force the projecting portions thereof into engagement with the edges of said tie.

5. In combination with a pair of rails extending transversely of a metallic railroad tie comprising an elongated body including a
15 relatively broad horizontal section, resilient rail seats spacing said rails from the tie, said seats extending transversely of the tie and beyond the edges thereof thereby adapted to engage the latter to prevent displacement of
20 said seats, means for securing the rails to said tie, and to compress said resilient rail seats to force the projecting portions thereof into engagement with the edges of said tie, said securing means comprising sets of elements,
25 each set comprising a plurality of opposed lugs detachably secured to said body.

6. In combination with a pair of rails extending transversely of a metallic railroad tie comprising an elongated body of channel section including a relatively broad horizontal
30 section, resilient rail seats spacing said rails from the tie, said seats extending transversely of the tie and beyond the edges thereof thereby adapted to engage the latter to prevent displacement of said seats, means for
35 securing the rails to said tie, and to compress said resilient rail seats to force the projecting portions thereof into engagement with the edges of said tie, said securing means comprising sets of elements, each set comprising
40 a plurality of opposed lugs detachably secured to the horizontal section of said body, each of said lugs comprising a shank adapted to extend thru said horizontal section, a base
45 projecting laterally from said shank and adapted to engage the under face of said section and a head adapted to engage and to overlie the base portion of one of said rails.

In testimony whereof he has affixed his
50 signature.

ALEXANDER C. SHIVES.