

B. B. BETTS.
 COMBINED TIE PLATE AND ANCHOR FOR RAILWAY RAILS.
 APPLICATION FILED DEC. 10, 1910.

1,024,114.

Patented Apr. 23, 1912.

2 SHEETS—SHEET 1.

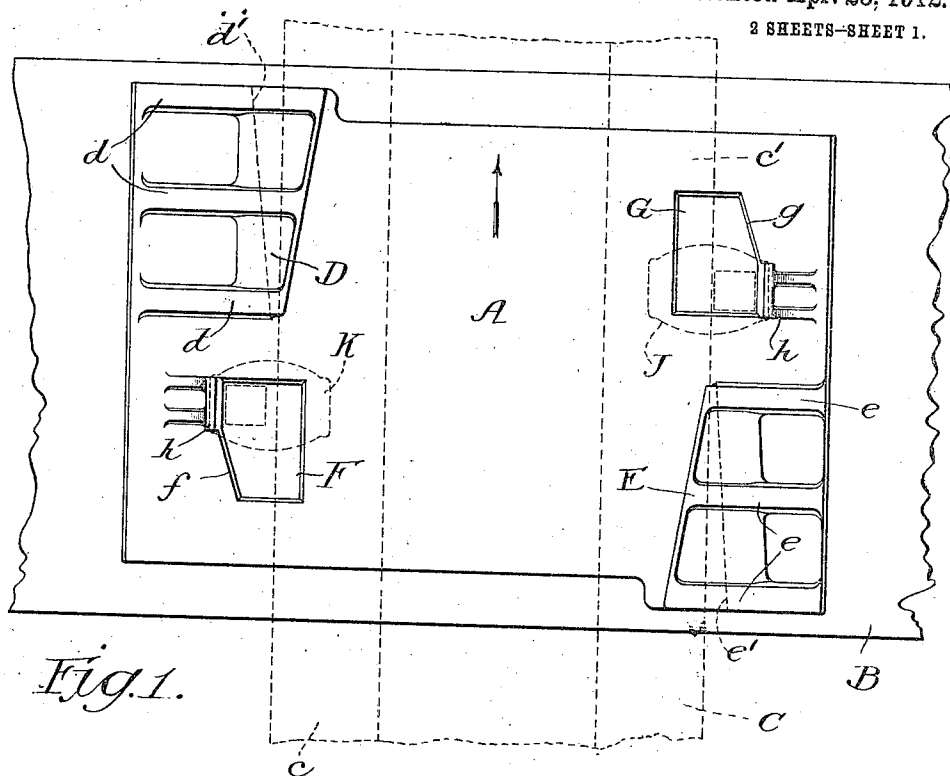
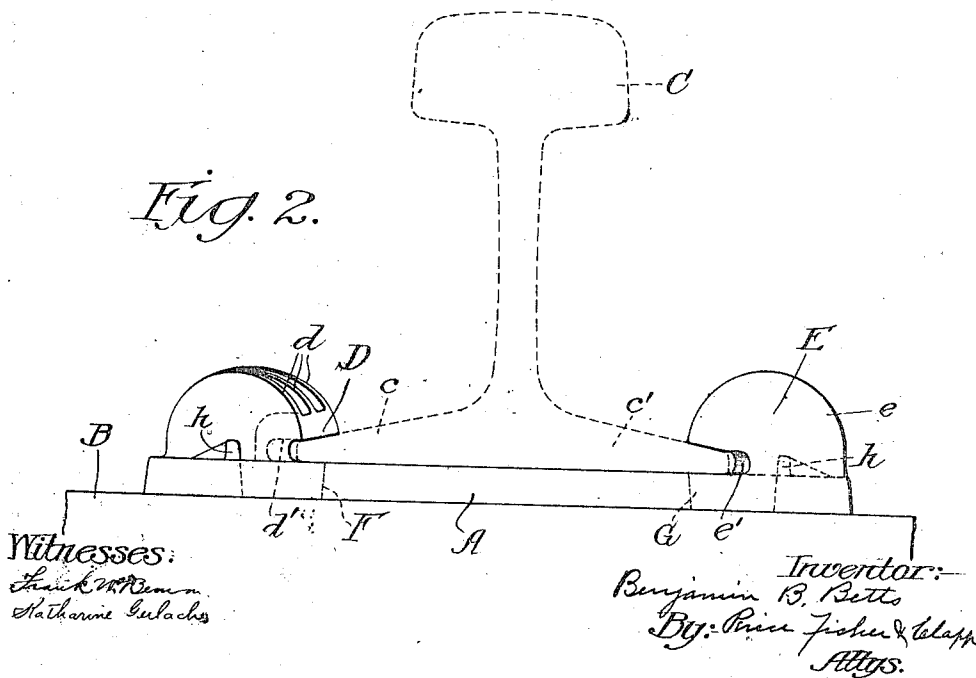


Fig. 1.

Fig. 2.



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2 SHEETS—SHEET 2.

Fig. 3.

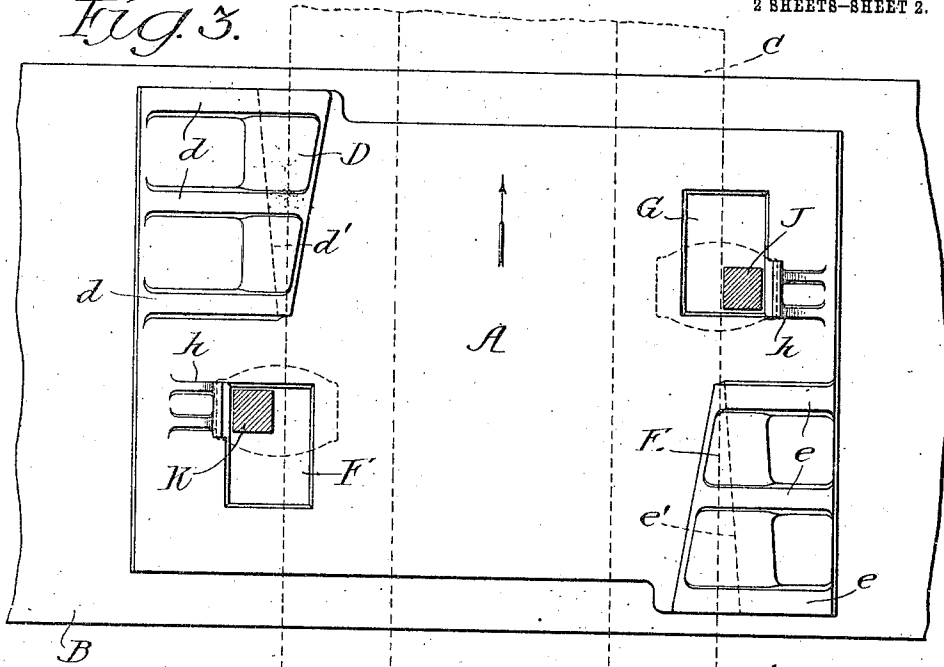
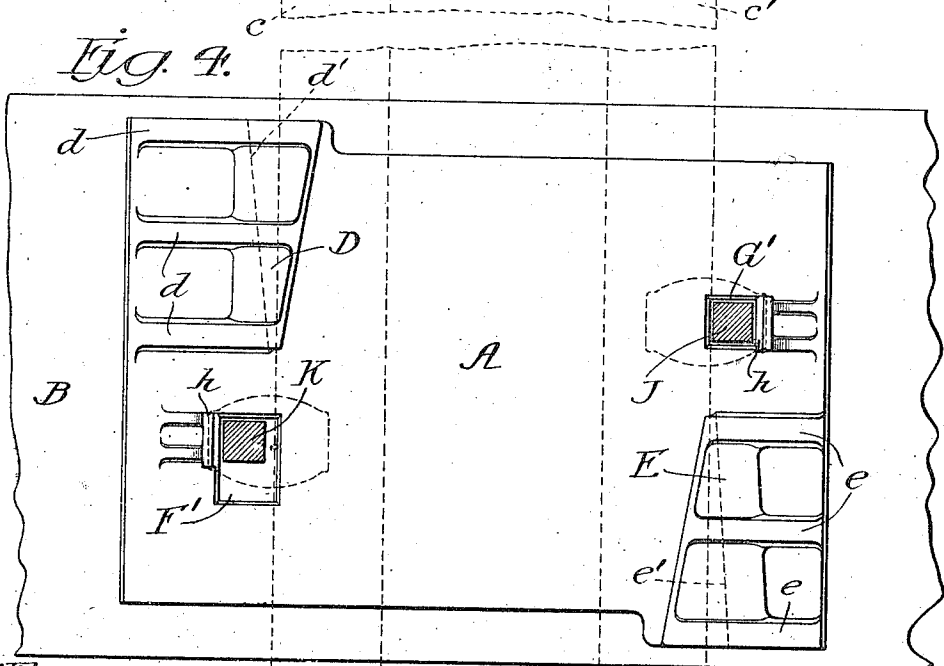


Fig. 4.



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UNITED STATES PATENT OFFICE.

BENJAMIN B. BETTS, OF ST. LOUIS, MISSOURI, ASSIGNOR TO POSITIVE RAIL ANCHOR COMPANY, OF LOUISVILLE, KENTUCKY, A CORPORATION OF VIRGINIA.

COMBINED TIE-PLATE AND ANCHOR FOR RAILWAY-RAILS.

1,024,114.

Specification of Letters Patent.

Patented Apr. 23, 1912.

Continuation of application Serial No. 474,144, filed January 25, 1909. This application filed December 10, 1910. Serial No. 598,649.

To all whom it may concern:

Be it known that I, BENJAMIN B. BETTS, a citizen of the United States, residing at St. Louis, State of Missouri, have invented certain new and useful Improvements in Combined Tie-Plates and Anchors for Railway-Rails, of which I do declare the following to be a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My present invention relates more particularly to that class of devices which serve not only to support the rail and hold it against lateral movement, but in which provision is also made for preventing the longitudinal "creeping" of the rail.

The object of my invention is to provide an effective construction of combined tie-plate and rail anchor whereby the rail will be securely held against longitudinal creeping and, as well also, against movement in other directions.

In certain respects this application is designed to be a continuation of an application filed by me in the United States Patent Office January 25, 1909, Serial No. 474,144, and to cover certain features of invention which have been canceled from said former application.

The invention consists in the features of improvement hereinafter described, illustrated in the accompanying drawings and particularly pointed out in the claims at the end of this specification.

Figure 1 is a plan view of a combined tie plate and rail anchor embodying my invention, this view showing a portion of a tie. Fig. 2 is an end view. Fig. 3 is a view similar to Fig. 1, but showing a modified form of the invention. Fig. 4 is a view similar to Fig. 1, but showing a further modification of the invention.

The body A of my improved combined tie-plate and anchor consists preferably of a substantially rectangular casting adapted to rest upon the upper surface of a cross-tie B whereon the railway rail C is supported. The plate A is provided upon its upper surface with suitable jaws D and E which engage respectively the base flanges *c* and *c'* of the rail C, and, as shown, these jaws D and E are by preference arranged at diagonally opposite corners of the plate A. By preference, the jaw D is reinforced or

strengthened by vertical ribs *d* that extend over the top of the jaw and unite with the outer portion of the upper surface of the plate A and, similarly, reinforcing ribs *e* are used to strengthen the jaw E. As shown, the cavity *d'* of the jaw D and the cavity *e'* of the jaw E are of such outline that when the plate is in position for use, the bearing or thrust of the jaws D and E shall be upon the upper surface of the base flanges of the rail, thus insuring that as the base flanges of the rail are forced into the cavities, which are deeper transversely than the base of the rail, a more effective gripping or wedging action of the jaws upon the rail shall occur.

Adjacent each end of the plate A and diagonally disposed thereon, are formed spike openings F and G to receive the spikes whereby the plate A is connected to the tie beneath it. The spike opening F and the spike opening G are considerably larger than the body of the spikes which these openings are designed to receive. The purpose in making the spike openings F and G of greater dimension in a direction transverse to the rail base, and in having such spike openings extend inwardly somewhat beyond the outer edges of the rail base flanges, is to insure that as the spikes are "set" or driven into the ties, they shall exert a wedging action tending to draw the oppositely disposed jaws D and E into tighter engagement with the base flanges of the rail. The object in making the spike holes F and G materially larger in the direction of the length of the rail than the width of the spikes, is to permit a rotative or turning movement of the plate A which shall cause the jaws D and E to more firmly grip the base flanges of the rail.

It will be noticed that the outer wall of each of the spike holes F and G is inclined or formed at an angle, as seen at *f* and *g*, so that any rotative or turning movement of the plate A, after it has been spiked to position for use, shall cause the outer wall or walls of the spike openings to ride against the outer surfaces of one or the other of the spikes J or K thus forcing the opposite jaws to be more tightly wedged upon the base flanges of the rail.

Preferably, a raised wall or lug *h* is formed adjacent that portion of each of the

spike openings F and G at which the driving of the spikes will be effected, the purpose of this raised wall *h* being to reinforce or strengthen the plate at such point and effectively resist the strain incident to the driving of the spike and its action in wedging the opposite gripping jaw onto the base flange of the rail.

From the foregoing description it will be seen that when my improved combined tie-plate and anchor is to be applied to a rail, the plate A will be placed diagonally beneath the base of the rail, with the inner inclined edges of the jaws parallel with the outer edges of the base flanges of the rail. As the jaws D and E are then turned into engagement with the rail flanges, the outer portions of the spike openings F and G will be exposed beneath the edges of the rail base flanges a sufficient distance to permit the pointed ends of the spikes J and K to be inserted in said openings. These spikes are of ordinary construction, with their shanks somewhat tapered, so that as the spikes are driven into the tie they will wedge against the outer edges of the rail base flanges and, consequently, will cause the jaws to be drawn firmly into wedging engagement with such flanges. After the plate A has been spiked in position, as shown in Fig. 1, any creeping of the rail in the direction of the arrow, (Fig. 1) will cause the plate A to turn or pivot slightly about the spike J as a center, and, as the plate A is thus turned, jaw E will be forced more firmly into engagement with the base flange *c'* of the rail; while at the same time the inward movement of the jaw D will cause it to more tightly wedge upon the opposite flange *c* of the rail. So, also, it is obvious that if the creeping of the rail should occur in a direction opposite to that shown by the arrow in Fig. 1, the plate A would turn or rotate slightly about the spike K as a center, and the jaws E and D would be caused to swing inward and, hence, more tightly grip the base flanges of the rail. It is obvious that inasmuch as the spike openings are of greater size (*i. e.*, in the direction of the rail) than the width of the spikes which they are designed to receive, the turning of the tie-plate about either of the spikes as a center would tend to increase the gripping action of the jaws upon the rail flanges, even if the outer walls of the spike openings were not provided with the inclined or wedging surfaces *f* and *g*. It will be seen, however, that by providing these inclined or wedging surfaces *f* and *g*, the turning of the plate incident to any creeping action of the rail would cause the outer walls of the spikes and draw the corresponding opposite jaws more firmly into engagement with the base flanges of the rail. Thus, as the plate A is turned about the

spike J as a center, incident to any initial creeping of the rail in the direction of the arrow, Fig. 1; the inclined wall *f* of the spike opening F will ride against the outer edge of the spike K and will cause the opposite jaw E of the plate to be held more firmly crowded upon the base flange *c'* of the rail. In like manner also, the inclined wall *g* of the spike opening G will bear against the outer face of the spike J and will cause the opposite jaw D to be drawn into tighter wedging engagement with the base flange *c* of the rail.

The combined tie plate and anchor above described is designed to prevent the creeping of the rails in either direction, but it is obvious that if the tie-plate were intended to prevent the creeping of the rail in one direction only, it would not be necessary that both of the spike openings should be made of materially greater diameter than the spikes; but in such case one opening would be made only sufficiently larger than the spike to permit the slight turning movement of the plate A.

While the construction above described is regarded as the preferred embodiment of my invention, it is obvious that the details of construction above described may be modified without departing from the spirit of the invention, and that features of the invention may be employed without its adoption as an entirety. Thus, for example, in Fig. 3 of the drawings, I have shown the plate A as provided with spike openings of rectangular form elongated in the direction of the length of the rail, so as to be of a greater size than the width of the spikes J and K, and it will be seen that any turning of the plate A about either the spike J or K as a center will cause an inward movement of the jaws which will force them into tighter engagement with the base flanges of the rail.

In Fig. 4 of the drawings, I have shown a combined tie-plate and rail anchor embodying my invention in part. This form of the invention illustrates how the device may be used for preventing the creeping of the rail in one direction only. The spike opening G' at one side is but slightly larger than the spike J, so as to permit a slight turning of the plate about the spike J as a center, but the spike opening F' is of a size considerably greater in the direction of the length of the rail than the width of the spike K, so that when the plate A turns about the spike J as a center a slight rotative movement of the plate is permitted, which will cause the gripping jaws D and E to more firmly wedge upon the base flanges of the rail.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is:

1. A combined tie-plate and rail anchor provided with diagonally opposite gripping

jaws, said device having spike openings at its opposite ends, one at least of said spike openings being of a size greater in the direction of the length of the rail than the diameter of the spike for which said opening is intended and so as to permit the device to turn about the spike within the other spike opening in order to increase the gripping action of the jaws.

2. A one-piece combination tie-plate and rail anchor provided with diagonally opposite gripping jaws, said device having spike openings of a size greater than the diameter of the spike and adapted to permit the spikes to normally engage their forward or rear edges and to be free of their opposite edges, so that when the rail tends to creep in either direction said spikes will act as pivots, causing the gripping jaws to more firmly engage and anchor the rail, substantially as described.

3. A one-piece combination tie-plate and rail anchor provided with diagonally opposite gripping jaws, said device having elongated spike openings to normally engage their forward or rear edges and to be free of their opposite edges, so that when the rail tends to creep in either direction said spikes will act as pivots, causing the gripping jaws to more firmly engage and anchor the rail, substantially as described.

4. A combined tie-plate and rail anchor provided with opposite gripping jaws to engage the base flanges of the rail, said device having openings for spikes at opposite sides of the rail seating portion of the plate, one at least of said spike openings having an inclined outer wall adapted to insure the increased gripping action of the opposite jaw as the device is shifted.

5. A combined tie-plate and rail anchor provided with a gripping jaw and a spike

opening at each side of the rail seating portion of the plate, said spike openings being in size greater than the diameter of the spikes to be used therein and having inclined outer walls to increase the gripping action of the jaws as the device is turned.

6. A combined tie-plate and rail anchor provided with diagonally opposite gripping jaws, said device having spike openings at opposite sides of the rail seating portion of the plate, said spike openings being of a size greater than the diameter of the spikes and being elongated in the direction of the length of the rail and having their outer walls inclined to increase the gripping action of the jaws as the device is turned.

7. A combined tie-plate and rail anchor provided with diagonally opposite gripping jaws, said device having spike openings at opposite sides of the rail seating portion of the plate, one at least of said spike openings being considerably larger, both longitudinally and transversely, than the body of the spike for which said opening is intended, said spike opening being arranged to extend beneath the edge of the base flange of the rail.

8. A combined tie-plate and rail anchor provided with diagonally opposite gripping jaws, said device having spike openings of a size greater, both longitudinally and transversely, than the bodies of the spikes for which said openings are intended, said spike openings extending into that portion of the plate whereon the base flanges of the rail will be seated, so that the inner portions of said spike openings shall lie beneath the outer edges of the rail flanges.

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