W. L. DE REMER.

TIE PLATE FOR RAILWAYS.

APPLICATION FILED OCT. 19, 1907.

965,571. **Patented July 26, 1910.**

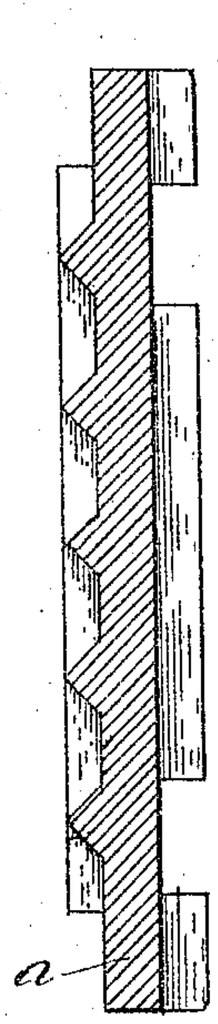


Fig. 3.

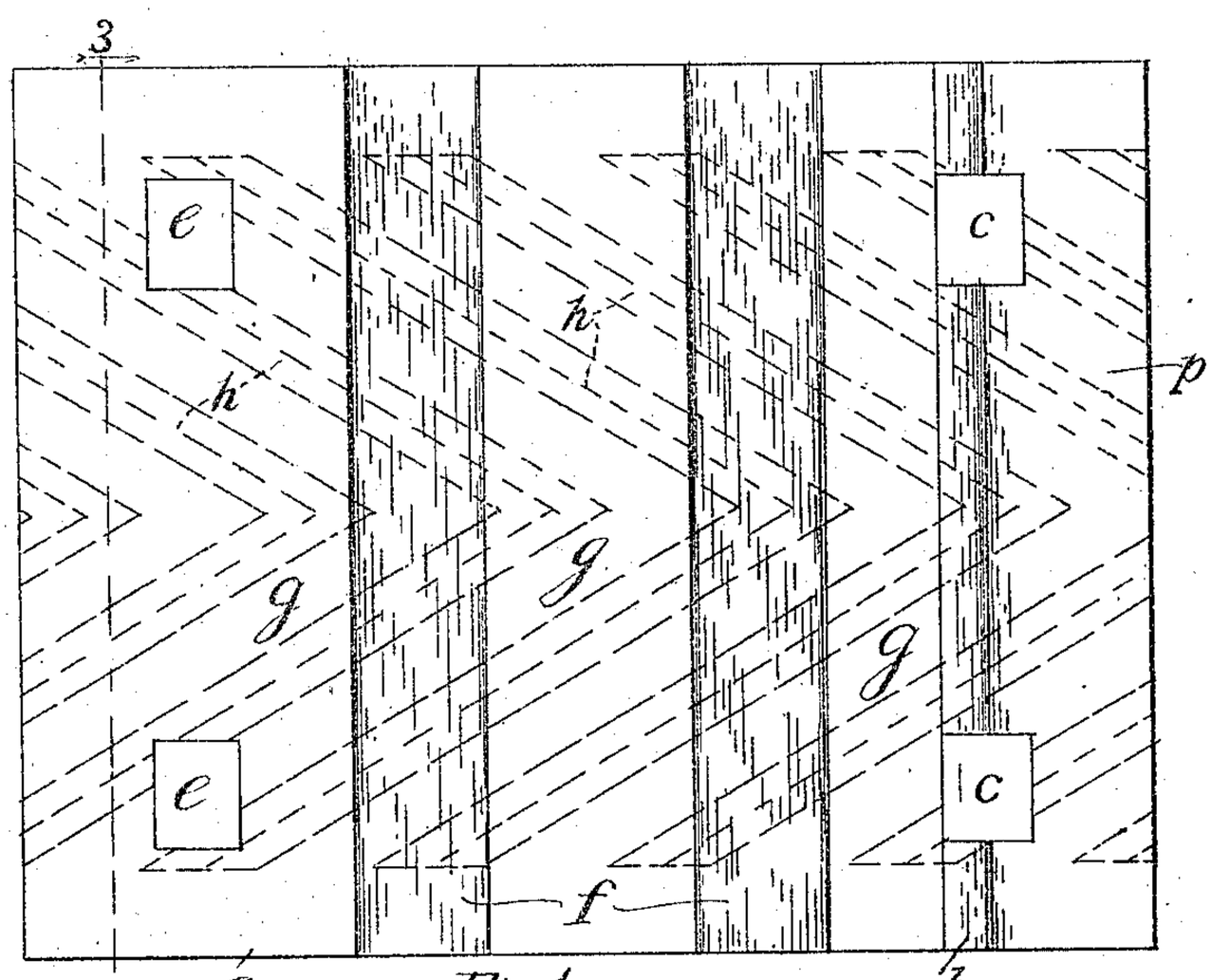


Fig. 1.

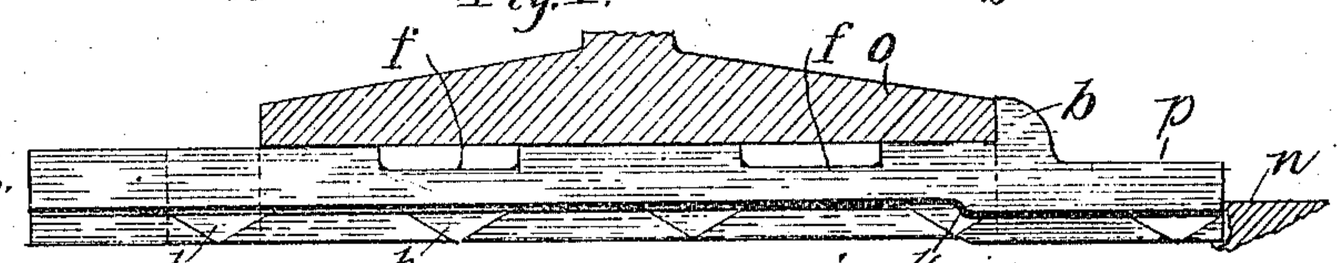


Fig. 2.

Fig. 5.

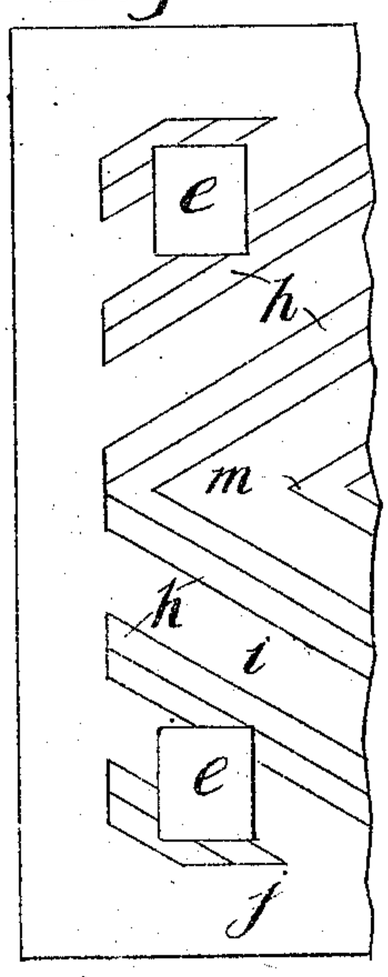
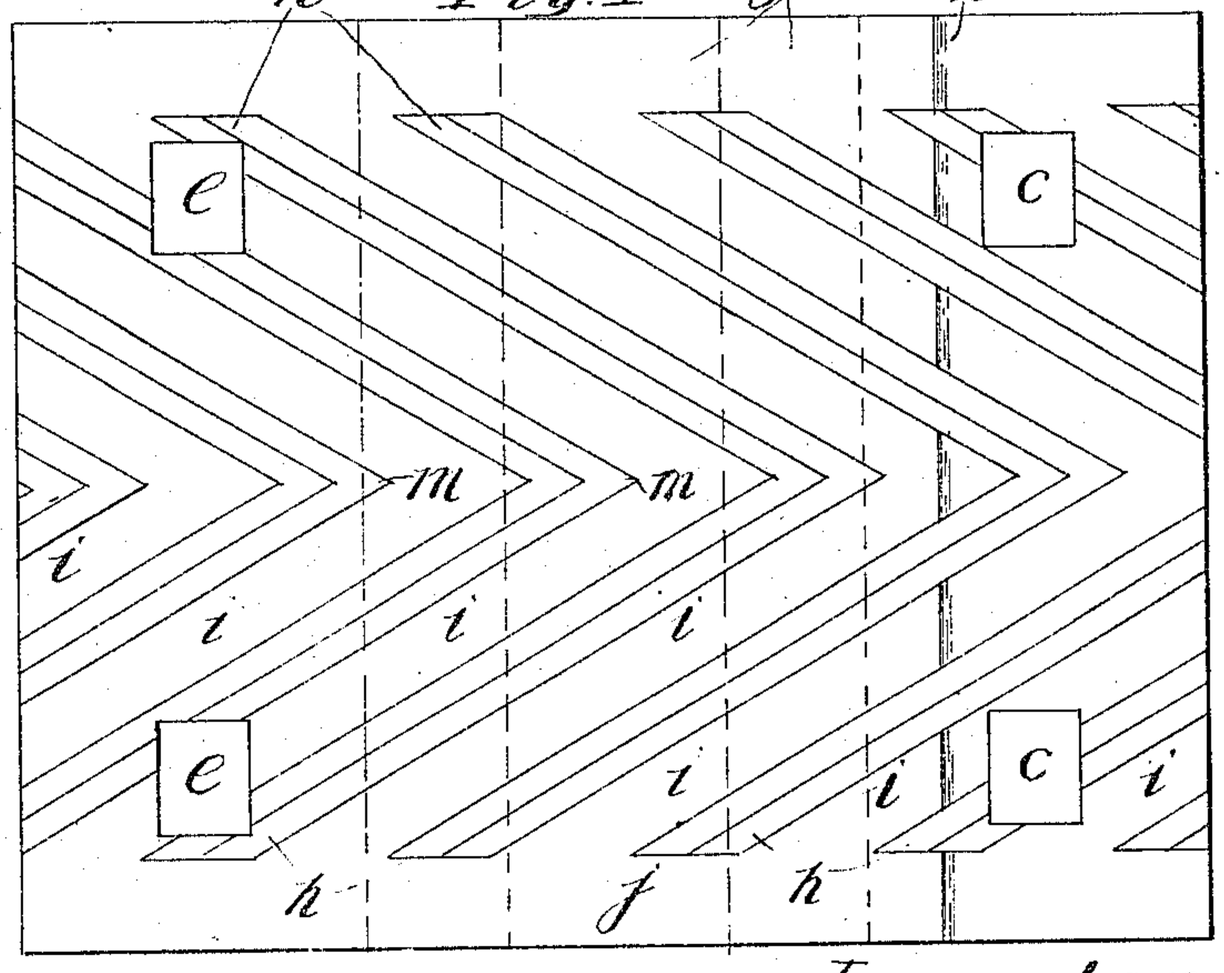


Fig. 4



Witnesses:
Nellie E. George
Rufus Codfue

Inventor:
William L. De Remer
By Harry Irwin Conner.
Attorney

UNITED STATES PATENT OFFICE.

WILLIAM L. DE REMER, OF CHICAGO, ILLINOIS.

TIE-PLATE FOR RAILWAYS.

965,571. Specification of Letters Patent. Patented July 26, 1910.

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To all whom it may concern:

Be it known that I, WILLIAM L. DE REMER, a citizen of the United States, residing in Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Tie-Plates for Railways, of which the following is a specification.

This invention relates to tie-plates adapted to be secured to the ties of a railway, to protect the ties and form a support for the track-rails.

The principal object of the invention is to provide a simple, economical and efficient tie-plate for railways.

Further objects are to provide a tie-plate of minimum weight and maximum effectual strength, reinforced at the point which comes beneath the outer edge of the rail when in position, by a transverse depending shoulder or relatively thick portion and having obliquely extending retaining ribs on the under side of the plate extending below the level of the transverse reinforce and converging at the longitudinal central portion of the plate from which they extend obliquely in different directions so as to form wedge-like depending rib portions having their points toward one end of the plate and having unobstructed spaces between separate outer end portions of such ribs, whereby the plate is strengthened and stiffened both longitudinally and transversely and a wedging effect is obtained which tends to increase the rigidity of the connection between the plate and tie and causes the plate to adhere more tightly and fit more snugly to the tie as it is wedged in by the lateral strains upon the rail supported thereby.

Other and further objects of the invention will appear from an examination of the drawings and the following description and claims.

The invention consists in the features, combinations and details of construction hereinafter described and claimed.

In the accompanying drawings Figure 1 is a plan view of a plate constructed in accordance with my improvements; Fig. 2, a side elevation of the same; Fig. 3, a transverse sectional view taken on line 3 of Fig. 1, looking in the direction of the arrow; Fig. 4, a bottom plan view of the plate; and Fig. 5, a bottom plan view of a segmental portion of a plate showing a modified arrangement of the bottom retaining ribs.

In constructing a tie-plate in accordance with my improvements I provide a main body portion *a* formed perferably of rolled metal, and having on its upper side a transverse rail-engaging or rail-retaining shoulder *b*. Perforations *c* extend through the rail-retaining shoulder and body portion of the plate in position to admit spikes for engaging the outer edge of a rail *d* to be held in position upon and supported by the plate, and perforations *e* are provided at suitable intervals near the opposite or inner end of the plate through which they extend in position to admit spikes for engaging and holding in place the inner edge of the rail. Transverse grooves *f* extend across the upper face of the plate in parallel relation to the upper rail retaining shoulder, and upper face portions *g* on opposite sides of these grooves form the rail supporting surface portions of the plate. On the bottom side of the plate, depending retaining ribs *h* are provided which are preferably so disposed as to leave flat or non-ribbed marginal portions along two edges of the plate. The flat bottomed overhang thus formed on opposite sides of the plate serves to exclude moisture from entering the creases in the tie to some extent and protects the tie, and together with the flat bottom surface portions of the plate which are between the ribs forms the main load supporting bottom surface of the plate. The substantially flat bottom surface portion of the plate thus formed by the portions *i* between the depending ribs and the marginal portions *j* are substantially continuous and connected. A relatively thick or reinforced transverse portion *k* extends across the under side of the plate beneath the upper rail-engaging shoulder and in such position that it is beneath the outer edge of the rail when in position thereon. This depending transverse shoulder or reinforce extends below the level of the main flat bottom surface portion of the plate and the upper surface of the portion *p* which is outside of the upper rail engaging shoulder is depressed so that it is below the level of the surface portions *g* a distance corresponding with the depression of the bottom face of the reinforce *k* below the surfaces *i* and *j*.

The bottom retaining and strengthening

ribs *h* extend below the level of the bottom face of the reinforce *k* and they also extend obliquely across said reinforce and obliquely in different directions from the same and from the longitudinal central portion of the plate where they converge. They are preferably in parallel relation and form wedge-like rib portions. The wedges thus formed are separate and the points all extend preferably in the same direction and toward one of the ends of the plate, preferably the outer end. The ribs are also V-shaped in cross-section so that they form wedges in a vertical plane as well as in a horizontal plane. The widest portions of the wedges, or in other words, the outer ends of the ribs are entirely separate so that the surface portions of the tie engaged by the flat surface portions of the plate between the ribs are not entirely separated from the portion beneath the overhang or margins. This preserves the integrity of the fibers of the tie to a considerable extent.

By arranging the depending ribs as above described and shown, so that the points *m* of the wedges are at the longitudinal center of the plate and between the ribs which form the next adjacent wedge portions, and by having the outer ends of the converging rib portions or wedges on opposite sides of the longitudinal center of the plate, so that each pair of converging ribs forms a wedge and all of the wedges overlap and form separate wedging surfaces, all of the wedges of the series thus formed converging toward one and the same edge of the plate, it will be seen that the strength of the plate both longitudinally and transversely is increased by the same ribs which serve to provide adhesion or to retain the plate in position and resist the side thrusts upon the rail to be supported thereby. The wedge-like depending ribs or projections thus formed are adapted to be wedged tightly into securing engagement with the tie *n* by the side thrusts upon the rail *o* which would otherwise have a tendency to loosen the plate or force it from its seat. The converging outer side surfaces of the wedges are both at the same angle with relation to the base or widest part of the wedge formed thereby, the outer ends of each pair of ribs being in a line parallel with the transverse depending shoulder *k* already described. This shoulder is substantially flat on its under side and extends from a point inside of the upper shoulder outward to or in the direction of the outer end of the plate and from side to side of the plate. The bottom surface of the depending portion thus formed is parallel with the upper surface portion *p* which is depressed, as shown, so as to be below the level of the upper rail bearing surface portions *g* which are between the upper shoulder and the inner end of the plate. In other words there is an offset in the plate, the upper face *p* which is outside of the upper shoulder being preferably parallel with the surfaces *g* which engage and support the rail and are on a plane above the level of the outer surface *p*. The bottom main surface portion of the depending shoulder or reinforce *k* is an equal distance below the level of the main bottom surface portions *i*, and the bottom edges of the ribs *h* are below the level of both the surfaces *i* and the bottom surface of the transverse reinforce or shoulder *k*. This depending shoulder considered independently of the depending ribs, is of less depth than the ribs and provides flat bottom surface portions which are adapted to compress the fibers of the tie beneath the outer edge of the rail without cutting or mutilating them, and it serves not only to strengthen the plate but to elevate the outer edge of the rail as desired and effectually resist the side thrusts upon the rail. It also coöperates with the depending oblique ribs in preventing the longitudinal movement of the plate. Its inner side face being inclined upward and toward the inner end of the plate, it serves to draw the wedge-like ribs more tightly into engagement or wedging contact with the fibers of the tie as it is forced down into position.

The plate thus formed is adapted to be rolled by means of cylindrical rolls. A multiplicity of the plates can be rolled in either direction either transversely or longitudinally of the plates and from a single strip of metal, the shoulders, ribs, reinforce and grooves being formed by a single rolling operation.

I claim:—

1. A tie-plate having on its under side a depending rib portion forming a wedge the point of which is in the direction of one end of the plate and the converging sides of which extend obliquely with relation to the plate and are adapted to be wedged against the fibers of the tie by the longitudinal movement of the plate produced by the strains to which it is subjected in use.

2. A tie-plate having a track-rail mounted thereon and having on its under side depending rib portions which converge and form wedges the points of which are toward one end of the plate and the fiber engaging sides of which extend at an oblique angle with relation to the plate and are adapted to be forced into wedging engagement with the fibers of the tie by the side thrusts upon the rail.

3. A tie-plate having a track-rail mounted thereon and provided with depending rib portions on its under side which converge and form wedges having points in the direction of one end of the plate adapted to be forced into wedging engagement with the tie by side strains upon the track-rail, the

point of each wedge being between the rib portions which form the next adjacent wedge.

4. A tie-plate having on its under side a plurality of depending ribs extending obliquely of the plate and in oblique relation to each other and having a depending reinforce extending below the level of the main bottom surface of the plate of less depth than the obliquely extending ribs and adapted to be embedded in the tie without severing the fibers thereof.

5. A tie-plate having on its under side a plurality of depending ribs extending obliquely of the plate and converging in pairs forming wedges having their points in the direction of the end of the plate, said wedges being entirely separate and having unobstructed spaces therebetween for receiving portions of a tie when the ribs are embedded therein, a rail-engaging shoulder upon the upper side of the plate, and a transversely extending reinforce forming a depending transverse shoulder on the under side of the plate beneath the upper rail-engaging shoulder.

6. A tie-plate having on its under side a plurality of depending ribs converging in separate pairs and forming separate wedges having points toward one end of the plate, said ribs extending obliquely of the plate and having spaces between their outer ends, the plate having flat bottomed marginal portions on opposite sides of the bottom ribbed portion, a rail-engaging shoulder on the upper side of the plate, and a transversely extending reinforce forming a depending transverse shoulder on the under side of the plate beneath the upper rail engaging shoulder.

7. A tie-plate having on its under side a plurality of pairs of converging depending ribs forming wedges having points toward one end of the plate, said ribs extending obliquely of the plate in different directions on opposite sides of the longitudinal center or converging points, the plate having relatively flat bottomed marginal portions on opposite sides of said ribbed portion, and also having on its upper side transversely extending grooves between upper rail supporting surface portions, an upper transverse rail-engaging shoulder, and a transversely extending reinforce forming a depending transverse shoulder on the under side of the plate beneath the upper rail engaging shoulder.

8. A rolled metal tie-plate having a reinforce extending transversely thereof forming a bottom shoulder, and having offset body portions of substantially equal thickness extending transversely of the plate in substantially parallel but different planes on opposite sides of the reinforced portion.

9. A tie-plate having a reinforced shouldered portion extending transversely thereof, and stepped or offset body portions both of less thickness than the reinforced portion and extending in different planes on opposite sides of the reinforced portion to the respective ends of the plate.

10. A tie-plate having a reinforced portion extending transversely thereof, and a body portion bent bodily into offset portions which extend in substantially parallel but different planes on opposite sides of the reinforced portion.

11. A tie-plate having a relatively thick portion extending transversely of the plate and offset body portions extending longitudinally of the plate in different planes on opposite sides of the shoulder, the upper surface of the plate from the shoulder toward the outer end being on a lower plane than the upper rail supporting surface portion, and the bottom face beneath and outside of the relatively thick portion being on a plane below the level of the bottom surface of the main body portion over which the rail extends when the plate is in operative position.

12. A tie-plate having a reinforce forming a transversely extending depending shoulder on the under side of the plate, and having depending rib portions on the under side of the plate extending obliquely of the plate and at an angle with relation to each other.

13. A tie-plate having a reinforce forming a transversely extending depending shoulder on the under side of the plate, and having on the under side of the plate a series of depending ribs all of which converge toward one edge of the plate.

14. A tie-plate having on its under side a series of depending ribs all of which converge toward one edge of the plate and form wedging portions adapted to be wedged into securing engagement with the fibers of a tie, the plate having relatively flat marginal bottom surface portions on opposite sides of the ribbed portion.

WILLIAM L. DE REMER.

Witnesses:

HARRY IRWIN CROMER,

CARTER BLATCHFORD.