(No Model.)

W. GOLDIE.

RAILROAD RAIL BRACE.

No. 457,585. Patented Aug. 11, 1891.

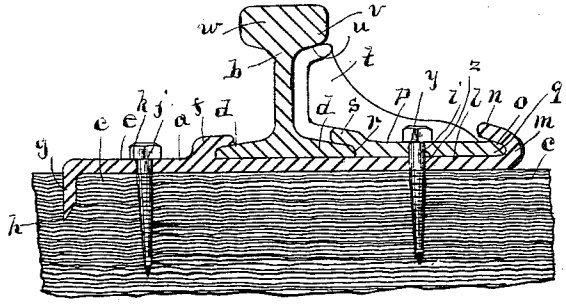


Fig. 2.

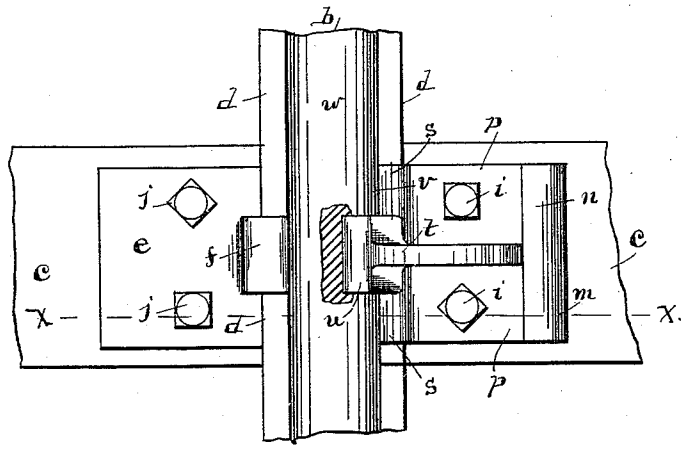


Fig. 1.

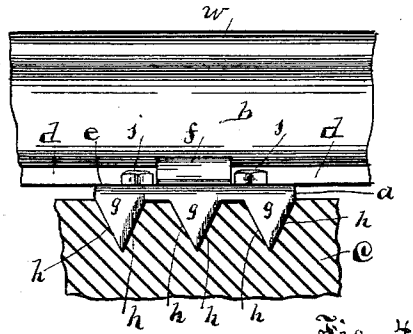


Fig. 4.

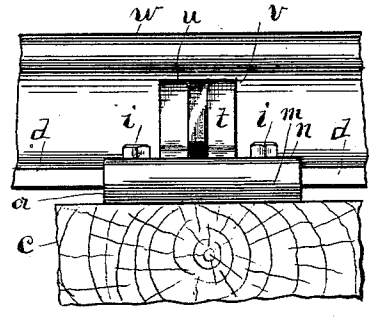


Fig. 3.

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UNITED STATES PATENT OFFICE.

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RAILROAD-RAIL BRACE.

SPECIFICATION forming part of Letters Patent No. 457,585, dated August 11, 1891.

Application filed February 13, 1891. Serial No. 381,279. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM GOLDIE, a citizen of the United States, residing at West Bay City, in the county of Bay and State of Michigan, have invented certain new and useful Improvements in Railroad-Rail Braces; and I do declare the following to be a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to improvements in railroad-rail braces of the class used in combination with tie-plates for carrying the rails; and the object of the invention is to provide a means for securing railroad-rails to the ties that will prevent the abrasion and cutting away of the ties by the rails, and also provide a strong and substantial brace for the upper portion or tread of the rails for supporting the rails against a crowding or lateral strain from passing trains, whereby the strength of the road is materially increased and faster and heavier trains can be run with safety.

Another object is to so arrange a tie-plate and rail-brace that the rail will be thoroughly and reliably held in position without contact with the spikes, and to provide an extensive and broad contact-surface on the securing devices to receive the wear and grinding action of the rails, whereby the abrasion and mutilation of the rail-flanges and the spikes is avoided, the liability of accidents from spreading or breaking of the rails and spikes is reduced, and the expense of repairing and keeping the road in proper condition is diminished; and my invention consists in a tie-plate between the rail and tie and provided on one end portion extending beyond the tie with downwardly-turned portions driven into the tie and with a lip or flange reaching over the edge of the rail-flange and provided on the opposite end with an upturned portion forming a shoulder, and a brace-piece having its outer edge resting against the said shoulder and with its opposite end provided with a shoulder on its under side for resting against the rail-flange and with a lip reaching upon the flange and with a brace extending upwardly and resting against the under side of the tread of the rail, and bolts or spikes passed through the brace portion and tie-plate and driven into the tie, all of which will be hereinafter more particularly described, and will also be especially designated in the claims of this specification.

In the accompanying drawings my improvement is shown in several views, throughout which the same letters of reference are used to designate the same elements or parts.

Figure 1 represents a plan view of my improvement as attached to a railroad-rail and tie. Fig. 2 is a vertical transverse section of the same, taken at *x x*. Fig. 3 is a view in elevation of the outer side of a rail secured in position upon the tie by my improved fastening. Fig. 4 is a view of the inner side of the same with transverse section of the tie.

a represents a tie-plate of rolled metal placed between the rail *b* and the tie *c*. This plate extends to a considerable distance on each side of the base-flange *d* of the rail, and the portion *e* on the inner side of the rail is provided with an upwardly-projecting flange *f*, which rests in contact with the edge of the base-flange *d*, and also reaches over upon the flange, and the inner end of the portion *e* is provided with downwardly-turned portions *g*, which in turn have their diagonal edges *h*, made sharp so as to sever transversely the fiber of the tie into which they are driven in a neat and clean manner. This portion *e* is also firmly secured upon the tie by one or more screw-bolts *j'*, as required, passed through suitable openings *k* in the plate and driven into the tie. The opposite end portion *l* of the tie-plate is provided with an upturned portion *m*, and this portion *m* is in turn provided with an inwardly-turned flange or rib *n*, leaving a groove-like space or channel *o* between the portion *n* and the tie-plate, and the portion *m* is arranged so as to lie slightly at an angle with the plate, so that the space between the rail and the part *n* will be greater at one side edge of the plate than at the other.

p is a base of a brace portion, and lies with its under face upon the portion *l*, and is arranged with its outer edge *q* within the channel *o*, and is provided on its inner edge with a shoulder *r* in contact with the lateral edge of the base-flange *d*, and also with a lip *s*, reaching over the upper side of the flange.

Projecting upwardly from the middle portion of the part p is arranged a brace t, which has its upper end provided with a contact-surface n, adapted to rest beneath the outer projection v of the tread w of the rail, and the outer edge q of the base is arranged to lie slightly inclined to the shoulder r to correspond to the incline of the groove o, and the tie-plate being in position, with the inner side of the base-flange d resting against and beneath the flange f, the brace portion is placed against the outside of the rail with the outer edge q resting in the groove o, and then is moved laterally to bring the inclines of the edges q to a solid bearing against the incline of the groove, which brings the face n of the brace and the shoulder r to a solid and firm bearing against the tread w and flange d of the rail, and this brings the openings y in the base p and the openings z in the tie-plate to coincide, and then bolts or spikes i are passed through the openings and driven into the tie to secure the parts in position. The brace portion t being upon the outer side of and supporting the rail from its upper or tread portion and resting upon the tie-plate, which is provided with an extended bearing-surface on the tie, serves to distribute the weight of the rail and its load over a greater area of the surface, so that the usual jarring and compression upon the tie does not operate to mutilate the tie beneath the rails, and the effect of the usual chafing and grinding by the longitudinal movement of the rails in contact with the ties and spikes, obtains on the greater area of the metal tie-plate and the flanges, so that the wear of the parts is greatly reduced and the efficiency of the road is materially enhanced.

It will be noticed that it is not altogether necessary that the part n shall extend over the outer edge q of the brace portion, as this part n being omitted the bolts or spikes i retain the parts together, and the bracing effect of the part m is substantially the same, and by forming the tie-plate of a thin rolled sheet and providing the portions g for entering the tie a firm and solid support for the rails upon the ties is provided without great expense, while by the addition of the brace portion outside of the rail and against the upturned portion m a means of retaining the track to the correct and required gage is provided, whereby the cost of realigning the track and changing the gage thereof is avoided, and the chances for accidents from spreading of the rails is greatly lessened, and the portion g which enters the tie may be omitted and good results will be produced, as the spikes being tied together by the plate beneath the rail produce a powerful resistance against a crowding or lateral strain, and, if desired, the openings k may be so located as to permit the spikes to be driven in contact with the inner edge of the rail and with the heads reaching over the rail-flange, and thus permit the flange f to be omitted, so that I do not confine my invention altogether to the form of construction shown for the inner end portion of the tie-plate.

Of course it is not altogether necessary that this form of fastening should be applied to all of the ties, as when the track is straight every second or third tie supplied with this improvement is sufficient to retain the rails in alignment, while around curves, switches, and bridges, where extra strength of fastening for the rails is necessary to insure safety, the improved fastening is placed upon all of the ties.

It will also be noticed that the area of the tie-plate is such that a large portion of the tie in proximity to the rail is protected against wet and dampness, so that the portion of the tie which supports and carries the load will always remain dry and retain its original strength and rigidity.

Having now described the construction and operation of my improvement, what I claim as my invention is—

1. The combination of the tie and the rail, with a tie-plate between the rail and tie and provided with an upwardly projecting flange having an approximately horizontal extension for contact with the inner lateral edge and upper side of the base-flange of the rail and provided on its outer end with an upwardly and inwardly projecting flange, and a brace-piece having its inner end fitted to overlie the base-flange and hug the under side of the tread and the web of the rail and having a base portion resting upon the tie-plate with its outer edge resting against the said upwardly-projecting flange and with its inner edge against the lateral edge of the base-flange of the rail, and bolts or spikes passed through the said base portion and tie-plate and into the tie, substantially as and for the purpose set forth.

2. A railroad-rail support consisting of a plate provided on its inner end portion with an upwardly-projecting flange having an approximately horizontal extension for engaging with the inner edge and upper side of the inner base-flange of the rail and provided on its outer or opposite end with an upwardly-projecting flange, and a brace portion having a base resting on the said tie-plate with its outer edge against the said upwardly-projecting flange and with its inner edge against the outer edge of the base-flange of the rail and having an upwardly-projecting brace with its inner edge fitted to hug the under side of the tread and to overlie the upper side of the base-flange of the rail and provided with spike-openings through the said base portion and the tie-plate, substantially as set forth.

3. The combination of the tie and the rail, with a tie-plate between the rail and tie and provided with a downwardly-turned portion on its inner end entering the tie and with an upwardly-projecting flange engaging with and reaching over the inner edge of the rail-flange and provided on its outer end

with an upwardly and inwardly turned shoulder, and a brace with its upper end in contact with the outer side of the tread of the rail and having its lower portion resting on the said tie-plate and in contact with the said shoulder and the outer edge and upper side of the outer rail-flange, substantially as and for the purpose set forth.

4. The railway-rail and tie, in combination with the tie-plate between the rail and tie and provided on its inner end with a downwardly-turned portion entering the tie and with an upwardly-extending flange for engaging with and reaching over the inner edge of the rail-flange and having its outer end turned upwardly and inwardly to form a shoulder and groove, and a brace portion provided on its upper end with a face fitted to engage with the outer under side of the tread of the rail and having a base portion resting upon the said outer portion of the tie-plate and with its outer edge engaging with the said upturned shoulder and with the inner edge of the base fitted to engage with the outer edge and the upper side of the base-flange of the rail, and spikes or bolts passed through the said base portion and tie-plate and into the tie, substantially as set forth.

5. A railroad tie-plate and brace consisting of a tie-plate having a central portion for supporting the rail and having an extended inner portion provided with openings for a spike or bolt and with downwardly-turned portions on its outer end for entering the tie and with an upwardly-projecting flange for engaging with the inner edge of the rail and having its opposite outer end portion provided with openings for the spikes and with its outer end upturned to form a shoulder or groove, and a brace portion with its upper end provided with a face for contact with the tread of the rail and having the base portion resting on the said tie-plate with its inner edge fitted to bear against and reach over the lateral edge of the rail-flange and with its outer edge bearing against the said upturned end of the tie-plate and provided with spike-openings coincident with the said spike-openings in the tie-plate, substantially as set forth.

6. A combined rail-brace and tie-plate consisting of two sections, the tie-plate section having an upwardly-projecting flange provided with an approximately horizontal extension for overlying and holding down the inner edge of the rail-flange and having on its outer end an upwardly and inwardly projecting flange, and a brace-section having a base portion resting upon the tie-plate and with its outer edge in contact with the said upwardly-projecting flange and with its inner edge against the lateral edge of the rail-flange and provided with an upward extension having its inner edge fitted to hug the under side of the tread and the lateral side of the web and to overlie the base-flange of the rail for effecting an efficient holding-down action, substantially as set forth.

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

WILLIAM GOLDIE.

Witnesses:
JAS. E. THOMAS,
J. M. MAXON.