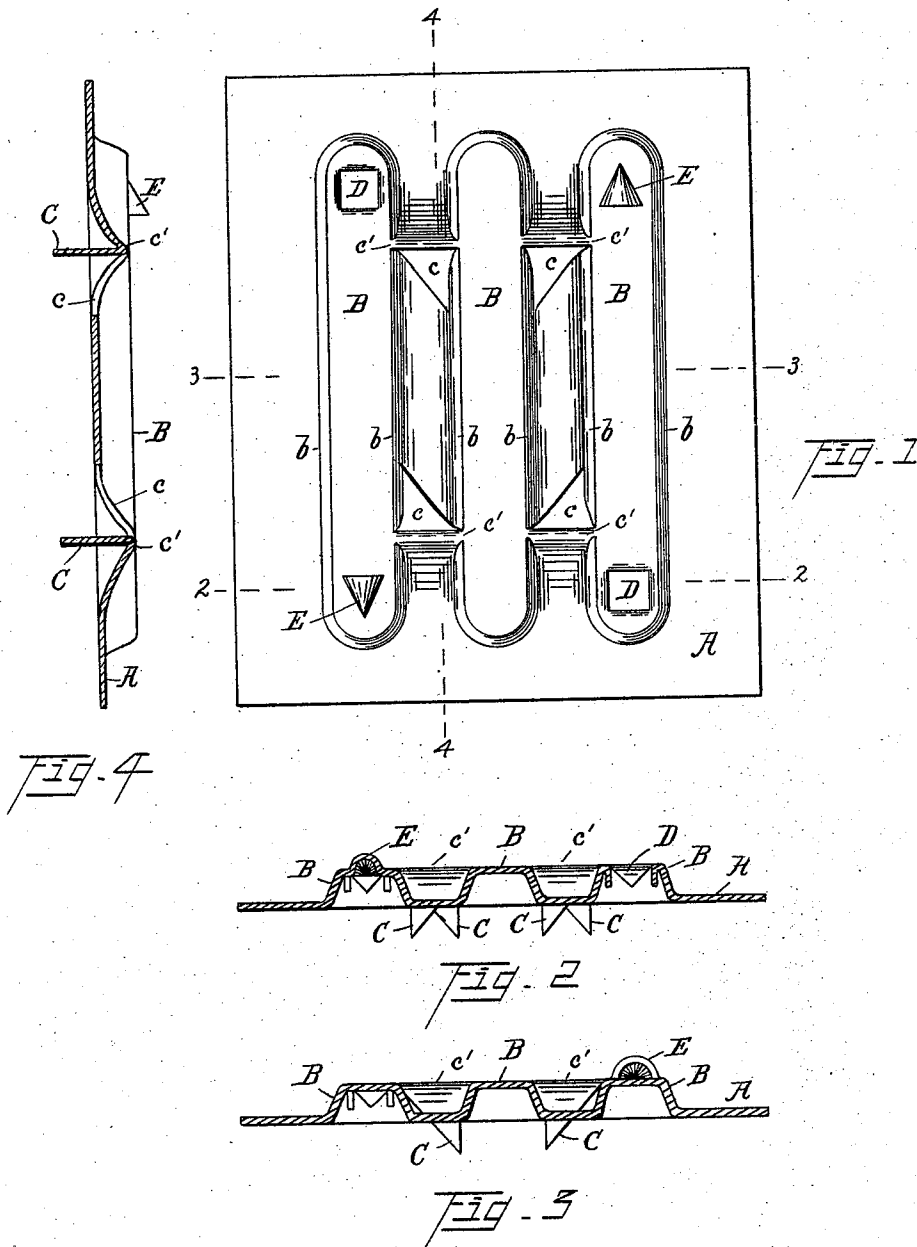


(No Model.)

H. W. AVERY.
RAILWAY TIE-PLATE.

No. 574,773.

Patented Jan. 5, 1897.



Witnesses:
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UNITED STATES PATENT OFFICE.

HENRY W. AVERY, OF CLEVELAND, OHIO.

RAILWAY-TIE PLATE.

SPECIFICATION forming part of Letters Patent No. 574,773, dated January 5, 1897.

Application filed March 19, 1896. Serial No. 583,999. (No model.)

To all whom it may concern:

Be it known that I, HENRY W. AVERY, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Railway-Tie Plates; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to tie-plates which are adapted to rest upon the ties and to support the rails for the purpose of preventing the rails from wearing the ties.

The object of the invention is to provide a very inexpensive but thoroughly efficient tie-plate which may be made of very thin metal of such shape that a number of the plates may, if desired, be formed on a long bar between suitable rolls, whereby the plates in a nearly completed condition may be cut from said bar. It is not my intention to limit the invention to a tie-plate constructed by this process, since it may be stamped or cast, if desired.

Another object of the invention is to produce a tie-plate which will be more or less resilient under the rail, whereby some of the pounding of the car-wheels and the strain and jar incident thereto will be absorbed in the plate, instead of being entirely transmitted through the plate to the tie.

Another object is to prevent the entrance and accumulation of water or dirt between the plate and tie and the consequent rotting of the tie.

Another object of the invention is to provide a tie-plate which is not liable to bend or buckle beneath the weight it supports.

Another object is to provide an enlarged bearing between the plate and the spikes, which are mainly relied upon to hold the rail and plate in fixed relation to each other and to the tie, whereby the tendency of the plate to shear off the spikes is lessened.

The invention consists in a tie-plate having the several features of construction hereinafter described, and definitely pointed out in the claims.

In the drawings, Figure 1 is a plan view of my improved tie-plate. Fig. 2 is a sectional view on line 2 2 of Fig. 1. Fig. 3 is a sectional

view on line 3 3, and Fig. 4 is a sectional view on line 4 4.

Referring to the parts by letters, A represents the tie-plate, which may be made of either wrought or cast metal, the former being preferred. The sides or marginal edges of the plate all lie in the same plane, wherefore when the plate rests upon a tie neither water, snow, or dust in any quantity can force its way between the tie and said edges at any point.

B B represent hollow transverse truss-ribs which extend upward from the plate and are integral with it. There may be two or more of these truss-ribs—three or four being the preferred number—and they begin and end back from the edges of the plate—that is to say, they lie wholly within the marginal edges. When so formed, the part of the plate at the ends of the ribs prevents the ribs from being flattened out, as they might be if the ribs extended entirely to the ends of the plate. The sides *b* of these ribs are approximately vertical, whereby they have the requisite strength to support the weight of the rails and train. These sides are, however, slightly inclined; wherefore the ribs have a degree of resiliency which takes up much of the pound and jar of the passing trains. This relieves the tie of considerable wear, and at the same time there is less jarring and jolting on the train. These ribs also act as trusses to stiffen the plate and to prevent it from bending or buckling.

The tongues C, which enter the tie and assist in holding the plate in fixed position thereon, project downward from the under side of the parts of the plate which lie between the ribs and beneath the rail-flange. When the plate is made of cast-iron, these tongues are cast integral with the plate; but when the plate is made of wrought metal, whether rolled or stamped, these tongues are cut and turned down from that part of the metal between the ribs. When the tongues are formed in the manner last referred to, holes *c* are necessarily made in the plate, into which, if the plate were not constructed so as to prevent it, water would flow onto the tie to its injury. This is prevented by raising the metal on both sides of the hole, prefer-

ably to substantially the level of the ribs B. These raised portions *c'* in the best construction are beneath and bear against the rail, wherefore these holes *c* are so completely
 5 protected that no water or snow can get to pass through them onto the tie. Although it is best, as I now believe, to have these raised portions *c'* extended to the level of the ribs B, it is not essential, because the same result in
 10 kind, but to a less degree, may be secured if the metal *c'* around the holes is raised sufficiently to prevent the water from running through said holes. The shape of the tongues is not material, although I prefer that they
 15 shall be triangular. Two tongues may be formed between the two outer ribs on each side of said plate, as shown in the drawings; but a less or greater number may be formed, if desired. When so formed, the
 20 tongues preferably remain attached at the side nearest the adjacent edges of the plate, and the metal to which the tongues are so attached is preferably bent up to form a rib *c'*, which extends between two ribs B B.
 25 These ribs not only prevent water from entering the holes *c*, but also strengthen and stiffen the plate.

The holes D for the spikes, which engage with the rail-flange, are formed in the best construction through the tops of the ribs B. To
 30 form these holes, the metal is not preferably cut away from the plate, but is cut through diagonally from the four corners of the square holes, leaving triangular tongues attached to
 35 each side thereof. These tongues are bent down and when the spike is inserted lie against its sides, thereby forming a broad bearing against the sides of the spike, which obviously reduces the liability of the plate
 40 shearing off the spike.

A boss or lug E, or two lugs, may be formed on the top of one or more of the ribs to serve as abutments for the rail-flange and prevent
 45 its lateral movement. These lugs may be pressed upward, if the plate is made of wrought metal, or may be cast on, if made of cast metal.

Having described my invention, I claim—

1. A railway-tie plate having two or more
 50 hollow truss-ribs which extend up from said plate and lie wholly within the marginal edges of the plate, and are adapted to support the rail, substantially as and for the purpose specified.

2. A railway-tie plate having its marginal edges in one plane and having two or more
 55 hollow truss-ribs which extend above said plane and lie wholly within said marginal edges, substantially as and for the purpose specified.

3. A railway-tie plate having two or more
 60 hollow truss-ribs which extend up from said plate and are adapted to support the rail and lie wholly within the marginal edges of said plate, said plate having on its under side a tongue or tongues which are attached to and
 65 project downward from the metal between said ribs, substantially as and for the purpose specified.

4. A railway-tie plate having its marginal edges in one plane, and hollow truss-ribs
 70 which extend above said plane and lie wholly within the marginal edges of the plate, and tongues cut and turned down from the metal between said ribs, substantially as and for the purpose specified.

5. A railway-tie plate having its marginal edges in one plane, and hollow truss-ribs
 75 which extend above said plane and lie wholly within the marginal edges of the plate, and tongues cut and turned down from the metal
 80 between said ribs, the metal between the hole thus formed and the edges of the plate being raised above said plane, substantially as and for the purpose specified.

6. A railway-tie plate having its marginal
 85 edges in one plane and hollow truss-ribs B which extend above said plane and lie wholly within the marginal edges of the plate, and having tongues cut and turned down from the metal between said ribs B and raised portions
 90 *c'* raised to the level of the ribs B on both sides of the holes from which said tongues are cut, substantially as and for the purpose specified.

7. A railway-tie plate, having two or more
 95 upwardly-extended hollow truss-ribs, and having spike-holes formed through the tops of said ribs, and triangular tongues turned down on all four sides of said spike-holes, substantially as and for the purposes specified.

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

HENRY W. AVERY.

Witnesses:

E. L. THURSTON,
 L. F. GRISWOLD.