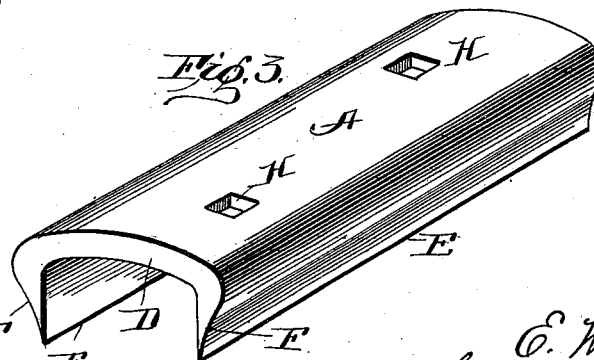
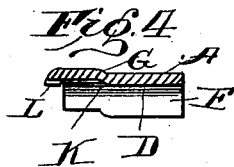
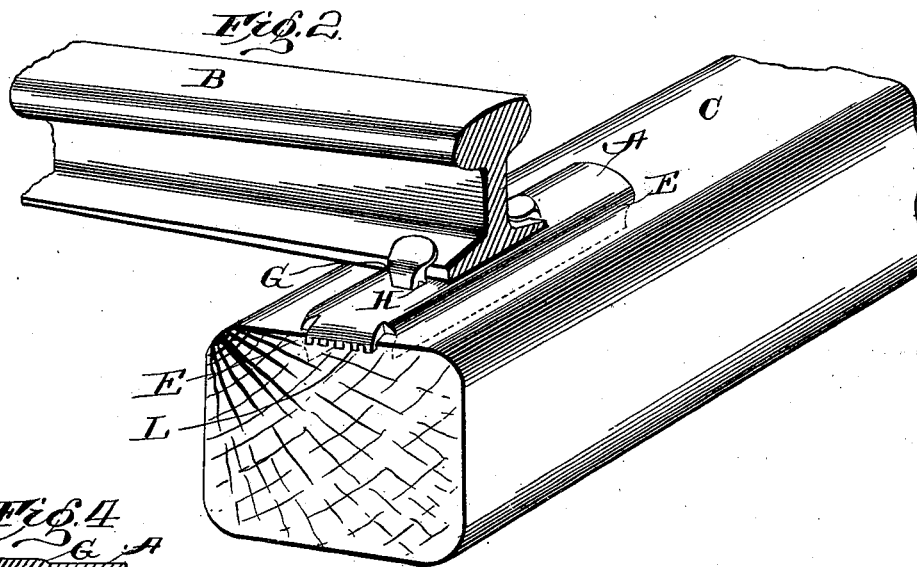
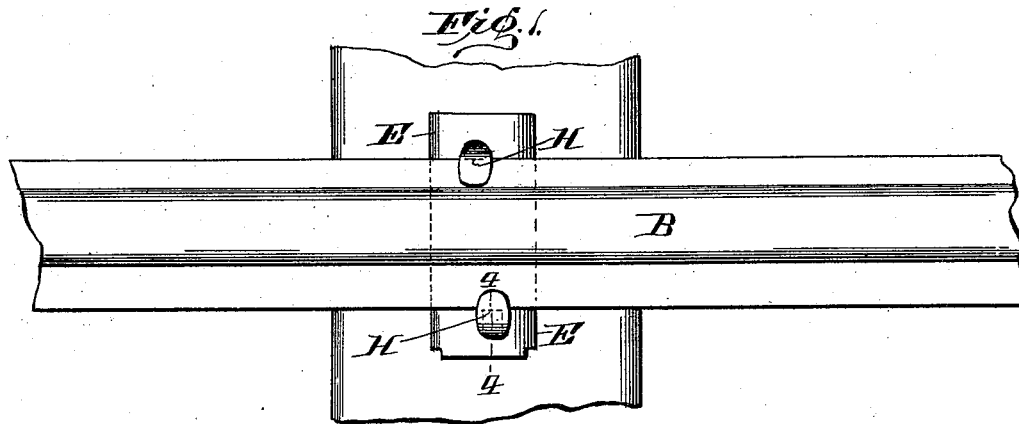


No. 645,759.

Patented Mar. 20, 1900.

E. M. SMITH.
RAILROAD TIE PLATE.
(Application filed June 23, 1899.)

(No Model.)



Witnesses:
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UNITED STATES PATENT OFFICE.

EDGAR MAVERICH SMITH, OF BOSTON, MASSACHUSETTS.

RAILROAD-TIE PLATE.

SPECIFICATION forming part of Letters Patent No. 645,759, dated March 20, 1900.

Application filed June 23, 1899. Serial No. 721,590. (No model.)

To all whom it may concern:

Be it known that I, EDGAR MAVERICH SMITH, a citizen of the United States, residing in the city of Boston, county of Suffolk, State
5 of Massachusetts, have invented a new and useful Improvement in Railroad-Tie Plates; and I do hereby declare that the following is a full, clear, and exact description of the same.

10 The object of my invention is to provide an improved tie-plate for railroads which will prevent the ties from "churning"—that is, rocking laterally under the undulating motion of the rails—which will be itself pre-
15 vented from rocking or tilting laterally on the ties, will be rigidly fastened to and held from both lateral and longitudinal movement on the tie, will not split or permit the rail to cut the tie, will not warp, buckle, or break, will
20 securely hold the rail from tilting or shifting in any direction, can be easily driven into the tie, and, finally, can be economically manufactured. I attain these important ends by the construction illustrated in the drawings,
25 in which—

Figure 1 is a plan view representing a tie-plate constructed in accordance with my invention securing a rail to a tie. Fig. 2 is a perspective view of said tie-plate. Fig. 3 is a
30 perspective view of a modified form of tie-plate. Fig. 4 is a detail sectional view on line 4 4, Fig. 1.

I make both forms of tie-plate shown with the usual spike-holes H H, with an arched
35 upper surface A, on and across which the rail B bears, so that the undulations of said rail B under a moving train-load will be permitted by said convex bearing instead of prevented, and the tie-plate will thus be prevented from
40 tilting laterally on the tie C and the tie from tilting or churning in the ballast, with an arched or concave under surface D, corresponding to the arched upper surface A to bear in part on the top of the tie, and with
45 integral and parallel depending edged side flanges E, extending the entire length of the plate and which are driven into the wooden tie, parallel with the length thereof, until the

arched under surface D of the plate bears along its sides on the tie.

The inner sides of the flanges E, I make
50 vertical and parallel to prevent the tie from splitting outwardly and in coöperation with the arched top and bottom of the tie-plate to crowd the wood between them and prevent
55 the plate from tilting or creeping laterally on the tie. The outer sides F of the flanges E, I make first from the lower edge convex and then concave, forming a double curved sur-
60 face, the upper concave portion of which bears against the wood, outside thereof, and thus more effectually prevents the plate from tilting or creeping laterally on the tie, while
65 the resulting cross-section of the flanges E gives them the greatest possible strength and stiffness with the least allowable weight and resistance to entering the tie.

In the tie-plate shown in Figs. 1 and 2 the tie-plate is in addition formed with a raised
70 transverse shoulder G from its upper arched surface near its outer end, against which shoulder the outer rail-base bears laterally, and with a corresponding transverse shoul-
75 der K on its under arched surface, which thus bears perpendicularly against the wood of the tie in the direction of the length thereof and effectually prevents the tie-plate from creep-
80 ing or tilting lengthwise on the tie and the rails from spreading, which feature is of very great importance when the tie-plate is used on curves, where the strain on the outer rail is so great.

To still more effectually and securely hold the outer end of the tie-plate on the tie, I form
85 said end of the tie-plate (shown in Figs. 1 and 2) with a transverse row of depending longitudinal teeth L, which, entering the tie, firmly engage the same and prevent the end of the tie-plate from shifting or tilting laterally or
90 longitudinally.

I claim as my invention—

1. A tie-plate having arched upper and lower surfaces and edged side flanges having vertical inner sides and inclined outer sides.
2. A tie-plate having an arched upper and
95 a lower surface and depending edged side

flanges having vertical inner sides and reversely-curved outer sides.

3. A tie-plate having edged side flanges, an arched upper and a lower surface, the upper
5 and lower surfaces rising near the outer end to form shoulders, the upper shoulder to retain the rail and the lower shoulder to bear against and lengthwise of the tie.

4. A tie-plate having an arched upper and

a lower surface, depending edged side flanges, 10 and a transverse row of longitudinal teeth at its outer end to enter the tie.

In testimony whereof I have hereunto set my hand the 24th day of May, 1899.

EDGAR MAVERICH SMITH.

In presence of—

A. WILDER POLLARD,

FREDERICK H. POLLARD.