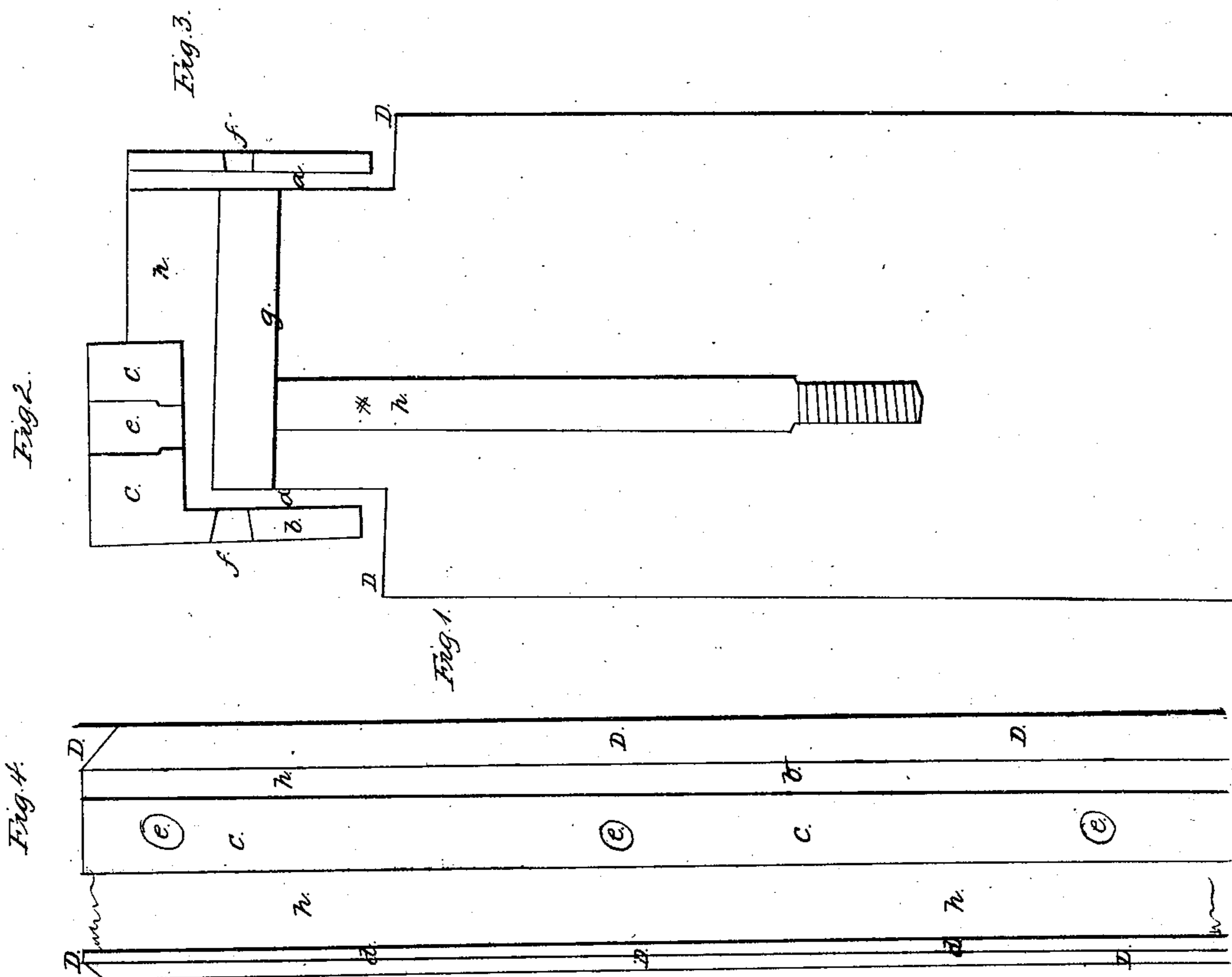


*H. Betts.*  
*Railroad Rail.*

*N<sup>o</sup> 24,533.*

*Patented Jun. 28, 1859.*



*Witnesses.*  
*M. H. Betts.*  
*M. H. Betts.*

*Inventor.*  
*Henry Betts.*

# UNITED STATES PATENT OFFICE.

HENRY BETTS, OF HAMILTON, CANADA.

## RAILROAD BAR OR RAIL.

Specification of Letters Patent No. 24,533, dated June 28, 1859.

*To all whom it may concern:*

Be it known that I, HENRY BETTS, a citizen of the United States, now temporarily residing in the city of Hamilton, Canada, have devised a new and Improved Form of Railroad-Bar; and I do hereby declare that the following is a true description thereof, reference being had to the accompanying drawings and to the letters marked thereon.

The nature of my invention consists in providing longitudinal timbers, about eight inches by four (8x4) inches square, provided with a rabbet upon the upper inner corner to receive a suitable piece of angle iron; and on the outer corner to receive a piece of band iron of suitable width and thickness, leaving a space between them of some two inches. This space I fill with a cement of sand and coal tar, with an addition of asphaltum, if that shall prove best. I will make this cement of any suitable composition, combining adhesiveness under the action of the elements of nature, cold, heat, and moisture. These, when united, I call the combination rail.

To enable others skilled in the art to make and use my invention I will proceed to describe its construction and operation. I do not restrict myself to any particular size or quality of timber for the rail, but leave it with the engineer to adapt that to the circumstances to which the road is to be adapted as to speed and weight of transit. The angle iron is not made in any form at present used, but I make the inner face two inches wide and one quarter to one half inch thick, while the upper face, or that part which takes the wear, should be three fourths or one inch thick. The band iron plate upon the outer corner needs only to be thick enough to act as washers under the nuts of the bolts that hold the inner bar to its place, and to prevent the cement from wearing away on the outer corner. This will be better understood by reference to the accompanying drawings. The rabbets in the string pieces are made by means of two circular saws at the mill where the timber is sawed; and I make them so much deeper than the thickness of the iron as will allow a bearing of considerable width to project beyond the face of the angle iron.

In preparing a grading for this rail very much will depend upon the nature of the

ground, the speed of transit, and the weight of the load to be drawn. But it is believed that where there is good gravel and a speed not exceeding twenty miles per hour, that transverse pieces, one in ten feet upon which the string pieces are laid, will be sufficient. When the nature of the soil is in any way soft, I should either drive piles and lay the timbers upon them, or trench the ground, and fill the trench with broken stones. I also propose to put in bolts of sufficient size across the track once in eight or ten feet or as near as in the judgment of competent engineers will be necessary to prevent the possibility of the track spreading, bearing in mind that the wood rail is bedded in the grading to the depth of six or eight, or ten inches. I also secure the iron rail to the wood by the means, first of a bolt with a bevel head passing through it, the iron and the wood transversely, the head being flush with the face of the rail, and also secondly, by a tug bolt passing down through the upper face of the rail into the string piece to such a depth as will prevent the possibility of splitting it off while passing curves. The space between the edge of the angle iron and the band iron upon the back side of the wood rail, upon the upper edge of the wood string piece, I fill with a cement made of sand, boiled in coal tar until it is of such consistency as that it will resist the action of the heat, cold, and moisture. The object of this cement is twofold: protection to the wood, and additional power of traction. Opposite to the joinings of the angle iron, I secure a flat plate, say four inches long, and of a width to fill the space between it and the band iron on the back side; which I call a protection plate, the object of which is to prevent the ends of the rail from battering under the action of wheel.

What I claim, is—

The angle rail—in combination with the outside bar where the space between them is filled in with cement prepared by boiling sand and coal tar in such proportions as will best resist the action of the elements, cold, heat and moisture, and the wear of the wheels.

HENRY BETTS.

In presence of—

GEO. B. HONFORD,  
T. G. LANE.