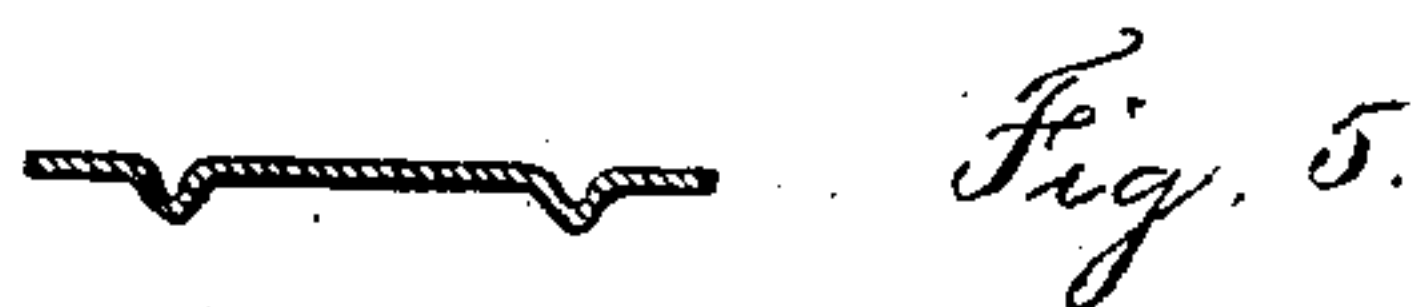
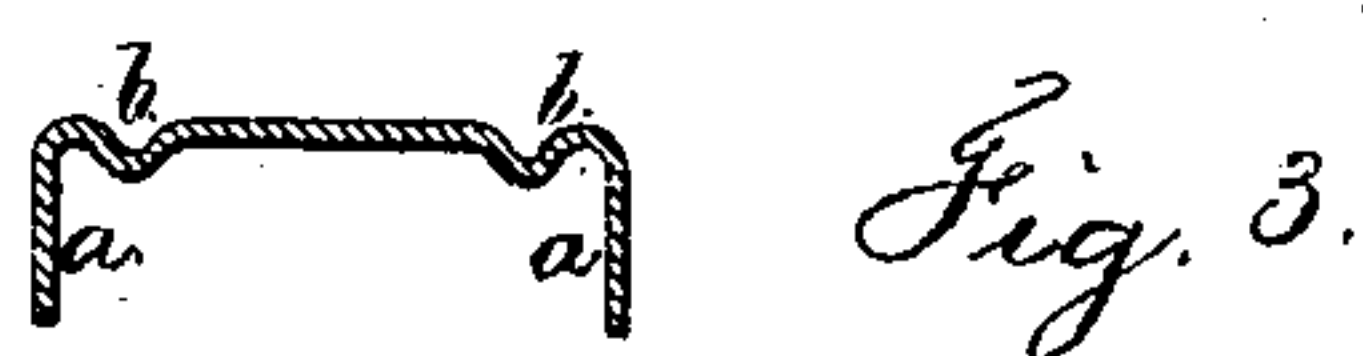
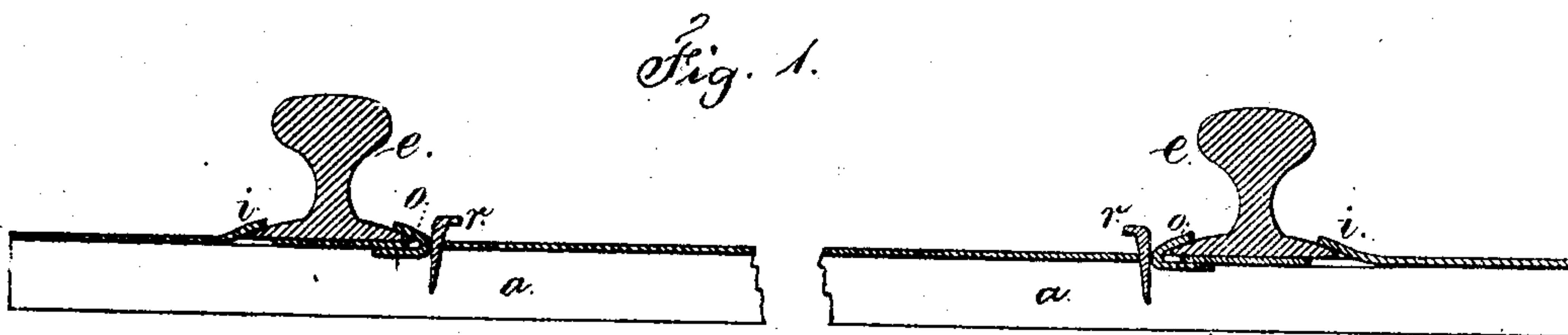


H. L. De ZENG.  
Railway-Ties.

No. 145,991.

Patented Dec. 30, 1873.



Witnesses.

Chas. H. Smith.

Geo. T. Puckney.

Inventor.

Henry L. De Zeng.

per

Lemuel W. Perrell.

att'y.

# UNITED STATES PATENT OFFICE

HENRY L. DE ZENG, OF GENEVA, NEW YORK.

## IMPROVEMENT IN RAILWAY-TIES.

Specification forming part of Letters Patent No. **145,991**, dated December 30, 1873; application filed June 3, 1873.

*To all whom it may concern:*

Be it known that I, HENRY L. DE ZENG, of Geneva, in the county of Ontario and State of New York, have invented an Improvement in Metallic Cross-Ties for Railways, of which the following is a specification:

This metallic cross-tie is made for taking the place of the ordinary wooden tie employed for supporting railway-bars and holding them at the proper distance apart.

I make use of a wrought-metal plate or strip bent up into a trough-shape, or made with longitudinal grooves and ribs to stiffen the metal, and a lip near each end to receive beneath it the flange of the rail, and, combined with this, I make use of a clip to clamp the other flange of the rail, such clip passing through a mortise in the cross-tie and pressed up to place by a key or wedge driven through the same mortise.

In the drawing, Figure 1 is a longitudinal section with the bars secured in place, and Figs. 2, 3, 4, and 5 are cross-sections of the sheet-metal cross-tie in some of the forms I employ, and which are adapted to various kinds of soil upon which the railway may rest.

The sheet or plate of metal is of proper length, according to the width of track, and it is of a breadth sufficient to take a proper bearing upon the surface, and the thickness is such as to afford the required strength when the metal is corrugated lengthwise of the cross-tie. This corrugation is either in the form of an inverted trough with the flanges *a* projecting downward, as in Fig. 2, or with the addition of ribs *b*, as in Fig. 3, or the corrugations

may be at each side, as in Fig. 3, or in the form of downward-projecting ribs, as in Figs. 4 and 5. In either case the cross-tie is strengthened and stiffened by the said corrugations so as to lessen the weight of material required, and according to the character of the soil or ballasting of the road, so one form of sheet-metal cross-tie or the other may be employed. The rails *e e* are kept at the proper gage by the lips *i i*, that are pressed upward from the under side of the metallic cross-tie, and the outer flanges of the rails pass beneath these lips. By the inner flanges of the rails the metallic cross-tie is perforated with polygonal openings of a size and shape adapted to receive the metallic clip *o*, that is of a **C** form, the lower portion passing beneath the cross-tie and the upper portion pressing upon the flange of the rail, and each clip is pressed up to place by a wedge or key, *r*, that is driven into the same hole in the cross-tie that contains the clip, and the length of this hole is such as to allow the clip to be set up firmly from time to time, by driving in the key, so as to clamp the rails to the cross-tie in the firmest manner.

I claim as my invention—

The wrought-metal cross-tie, with the lips *i* for the flange of the rail, in combination with the flange-clips *o* and keys *r*, substantially as and for the purposes set forth.

Signed by me this 28th day of May, A. D. 1873.

HENRY L. DE ZENG.

Witnesses:

DAVID S. HALL,  
THOMAS CHESTER.