(No Model.)

# G. H. POND.

## METAL TIE FOR RAILROADS.

No. 455,885. Patented July 14, 1891.

FIG. 1.

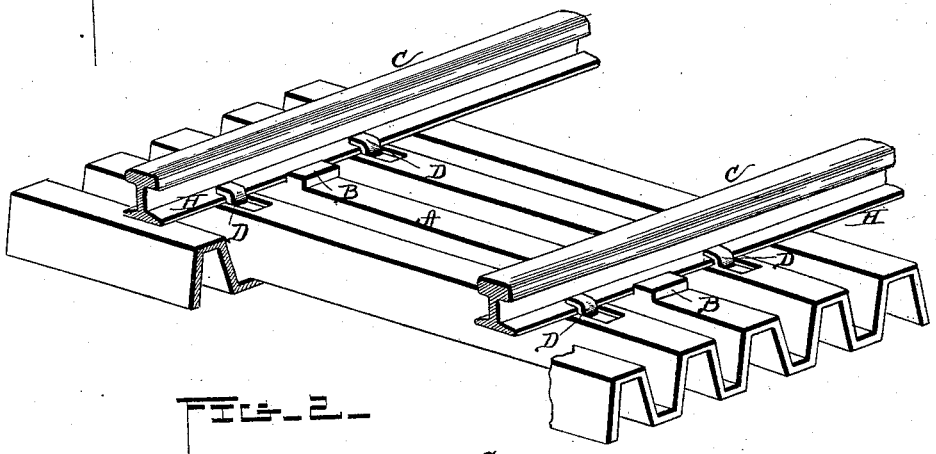



FIG. 2.

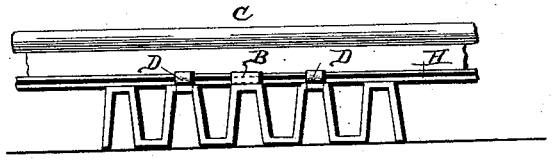



FIG. 3.

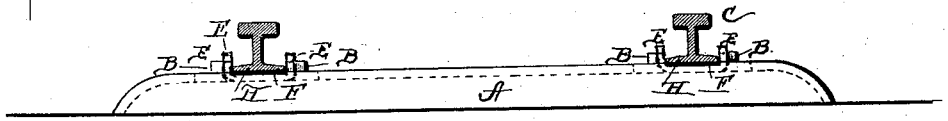
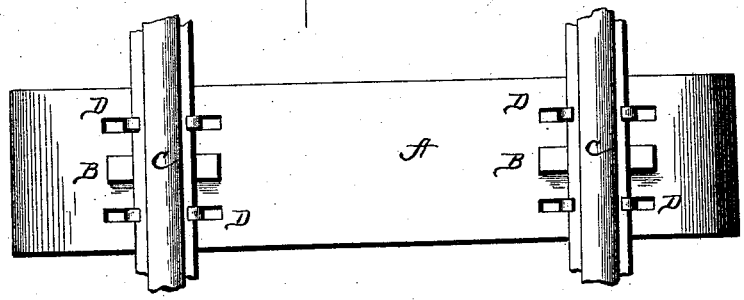



FIG. 4.




WITNESSES

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## METAL TIE FOR RAILROADS.

SPECIFICATION forming part of Letters Patent No. 455,885, dated July 14, 1891.

Application filed October 27, 1890. Serial No. 369,460. (No model.)

*To all whom it may concern:*

Be it known that I, GOLDSBURY HARDEN POND, a citizen of the United States, residing at Glens Falls, in the county of Warren and State of New York, have invented new and useful Improvements in Metal Ties for Railroads; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in metal railroad-ties.

The object of my invention is first to manufacture iron or steel railroad-ties in one continuous piece, and provide a series of square bosses occupying but a small space near each end of the tie, with their sides at right angles to the face or upper side of it, and to form these square bosses by pressing them up, while hot, from the body of the tie without cutting it; also, to have these square bosses located on the tie to correspond to the required gage of the road, and to each side of the base of the rails and contiguous thereto and directly opposite each other, to hold the rails in place to an exact gage, so that it would be impossible when the rails are laid in place on these ties and fastened there, as hereinafter described, for them to spread apart while under pressure from the weight of an engine and train of cars; and, second, to provide pieces shaped like the head of a railroad-spike or a large rivet cut on three sides from the body of the metal tie while hot, near each end and on one or both sides of the square bosses and in line with the rail side of the bosses and directly opposite each other on the face of the tie, and when cut left in a perpendicular position to the face of the tie; also, after the rails are laid on the ties between the square bosses to drive or rivet these perpendicular pieces down onto the base of the rails to hold them onto the tie to prevent the rails under any circumstances from springing or being bent out of a correct position in line with the road. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a perspective view of the tie, bosses, riveted pieces, and the rails in place. Fig. 2 is a side view of the rail and end view of a corrugated metal tie. Fig. 3 is a side view of a metal tie, illustrating the position and location of the perpendicular pieces as they are left when cut from the body of the tie. Fig. 4 is a view of the upper surface or face side of the tie with the rails in place on them, showing the bosses and riveted pieces as arranged on each side of the base of the rails.

Similar letters refer to similar parts.

The metal plate A, made in one continuous piece in a corrugated or other form, with the hereinafter-described additional points, constitutes my improved railroad-tie. Near the ends of these plates, and at a certain distance from each other to correspond to the required gage of the rails, and on each side of them, are square bosses B, Figs. 1, 2, 3, and 4, their sides at right angles to the face of the tie A, with one of the sides of the bosses contiguous to the base H of the rail C when in place, and on each side of it each boss B, located on the tie A, directly opposite the other, pressed up from the body of the tie A while it is hot, without cutting into the metal, nearly an inch, or a little more than the thickness of the base H of the rail C. (Illustrated in Figs. 1, 2, and 3.) These bosses B, when the metal ties A are laid in place, stand in exact line with the rails C on each side of them, forming solid abutments on each tie on both sides of the base H of the rail C, preventing them from spreading apart under any circumstances from the weight of a moving engine and train of cars. On each side of the bosses B and a little distance from them, in line with the side of the square bosses nearest the rail and contiguous to each side of the base of the rail when it is in place on the tie between the square bosses, are the pieces D, cut from the body of the tie on three sides while the metal is hot, and turned up into a perpendicular position, (illustrated at E, Fig. 3,) forming a piece not unlike the head of a railroad-spike, and are for the same purpose of holding the rails C down on the face of the metal tie A. After the rails C are laid in place on the ties A in the space F between the bosses B the pieces E are driven or riveted down, as illustrated in Figs. 1, 2, and 4, with a sledge and solidly riveted onto the base H of the rails C, firmly holding them from moving out of the

spaces between the bosses B on the ties, making a perfect railroad-track.

The pieces F, Fig. 3, are cut on three sides from the body of the tie, and when cut left in a perpendicular position. They are left so because it would be very tedious and impracticable to lay the rails on a railroad-bed with ties that had those pieces (lugs or fingers) bent or in a hooked position.

It would be impossible to repair a railroad-track by replacing a tie with these pieces bent over, as the base of the rail could not enter the space between the bent pieces. If the perpendicular pieces E are bent over toward the seat of the rail on the tie A in the slightest degree, the base H of the rail C will not enter the space F between them. If the base of the rail has to be entered obliquely between the bent lugs, then the base of the rail will not fill the space between them and cannot be kept up to the gage without a key or a wedge on one side of them.

The pieces E are left in a perpendicular position to facilitate the laying of the rails and in repairing the road by replacing a tie, and also in fastening the rail down to the tie, as they are already in position to rivet. The only function of the riveted pieces D is to hold the rails down between the square bosses B onto the face of the tie, preventing them from springing up or either of the rails from being bent out of line with the rest of the track.

The square bosses B, with their sides at right angles to the face of the tie A, are located on said tie on opposite sides of the base H of the rail C when in place and contiguous to them, occupying but a small space on the face of the tie. No transverse or other grooves are formed in pressing the bosses up from the body of the tie A, thereby weakening the tie where it should be the strongest. The tie A is not weakened by transverse or other cutting in pressing up the bosses B, but is left with the full strength of the plate of which they are made. The square bosses B have but one function, that of holding the rails from spreading apart.

A railroad constructed in this way is exceedingly safe from the common accident of the rails spreading, also from the very common way of derailing a train by drawing the spikes.

In this mode of construction a large saving is made, as no spikes are required. I do not claim any particular form of a metal tie, but prefer the corrugated form for great strength and light weight.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. A metal railroad-tie A, made in one continuous piece, provided with square bosses B, with their sides at right angles to the face of the tie A, pressed up from the body of the tie without cutting it, and located on the tie A to correspond to the gage of the rails C and to each side of the base of the rails H and contiguous thereto and directly opposite each other, substantially as and for the purposes herein set forth.

2. A metal railroad-tie A, made in one continuous piece, provided with pieces E, cut from the body of the tie A near one or both sides of the square bosses B and in line with the rail side of them, and left in a perpendicular position E to the face of the tie A, contiguous to each side of the base H of the rail C, and directly opposite each other, as herein set forth and described.

3. The combination of a metal railroad-tie A, made in one continuous piece, with the square bosses B and the perpendicular pieces E, substantially as and for the purposes described.

4. The combination of a metal tie A, made in one piece, with the perpendicular pieces E, the square bosses B, and the rails C, as herein described and set forth.

5. The combination of a metal railroad-tie A, made in one continuous piece, with the square bosses B, and the rails C, and the riveted pieces D, substantially as described and set forth.

GOLDSBURY HARDEN POND.

Witnesses:
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