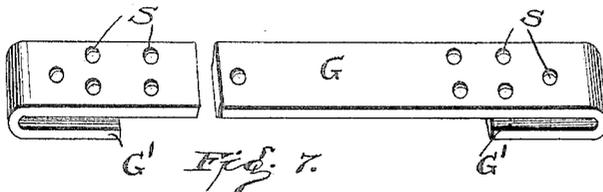
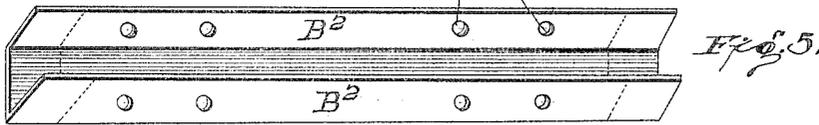
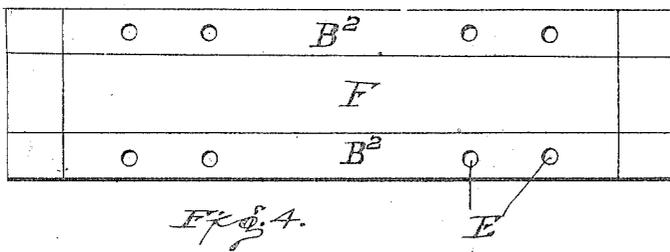
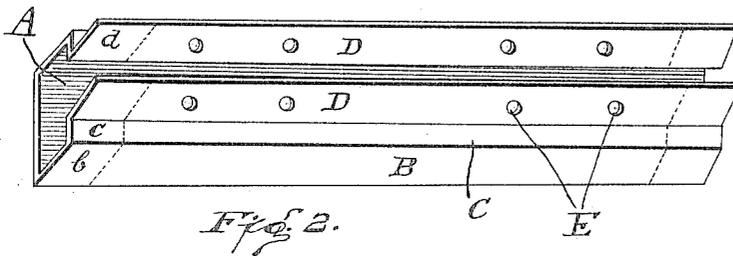
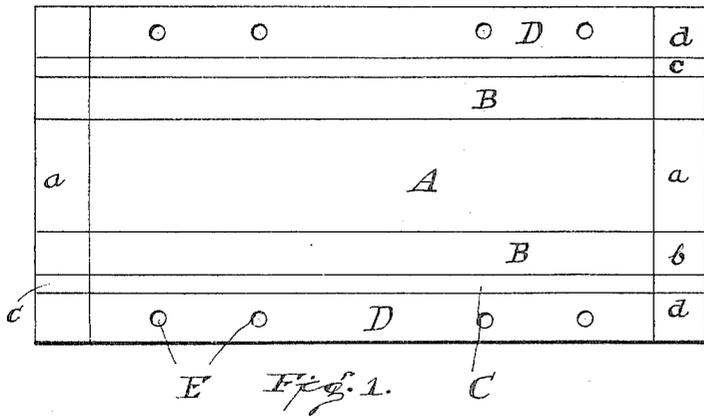


W. I. F. HARDEN.
RAILWAY APPLIANCE.
APPLICATION FILED OCT. 4, 1904.

2 SHEETS—SHEET 1.



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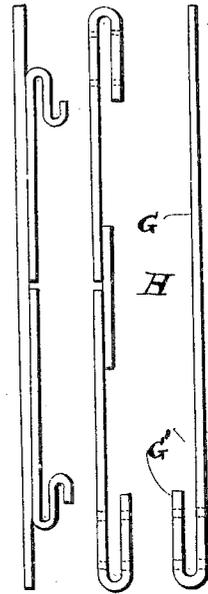
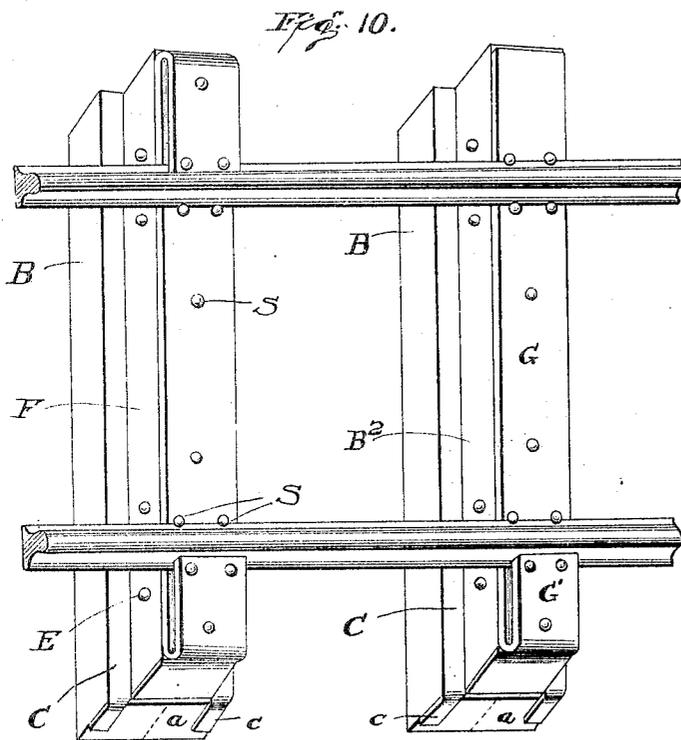
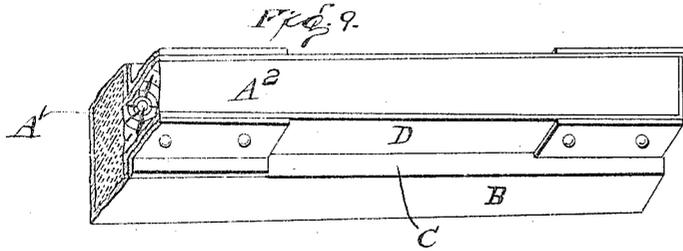


Fig. 6.

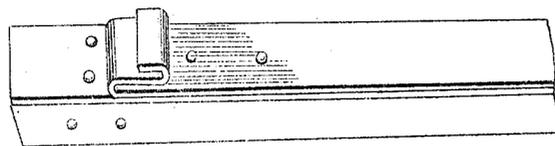


Fig. 8.

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UNITED STATES PATENT OFFICE.

WILLIAM I. F. HARDEN, OF HARTFORD, KANSAS.

RAILWAY APPLIANCE.

No. 802,450.

Specification of Letters Patent.

Patented Oct. 24, 1905.

Application filed October 4, 1904. Serial No. 227,171.

To all whom it may concern:

Be it known that I, WILLIAM I. F. HARDEN, a citizen of the United States, residing at Hartford, in the county of Lyon and State of Kansas, have invented certain new and useful Improvements in Railway Appliances; 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 more particularly to the construction of ties and means for securing rails thereto. It has for its object to provide a tie which is simple of construction, durable, and yet very cheap of manufacture, and in the construction of which a much smaller amount of wood is consumed than is now used for the ordinary wooden tie. The importance of cutting down the vast amount of wood now used in ties (something like eight hundred million ties are used annually in this country) as being necessary to protect the forests is generally understood and forms the basis of this invention.

The invention consists in the details of construction and combinations of parts hereinafter described, and more particularly pointed out in the claims concluding this specification.

In the accompanying drawings, illustrating the preferred embodiment of my invention, Figure 1 is a plan view of a sheet of metal marked out for the casing of a tie. Fig. 2 is a perspective view of said casing when bent into shape, but before the end flaps are turned in. Fig. 3 is a perspective view of wooden filling for the upper portion of the casing. Fig. 4 is a plan view of a sheet of metal marked out for the cover-plate. Fig. 5 is a perspective view of the cover-plate bent into shape. Figs. 6 and 7 are views of different forms of additional top plates, having turned-over ends adapted to engage the rails. Fig. 8 is a perspective view of one form of said plate in position on the cover-plate. Fig. 9 is a perspective view of a tie provided with brace-plates. Fig. 10 is a perspective view of a section of track, showing two complete ties and section of rails in place thereon.

While the preferred embodiment of my invention is illustrated in the accompanying drawings and its construction and operation are described in this specification, I reserve the right to make such changes from the construction shown and described herein as the

scope of the claims hereto appended will permit.

In carrying out my invention I cut the casing for the base and sides of the tie from a single sheet of metal, as shown in Fig. 1. The sheet is then bent into the form shown in Fig. 2 with a broad base and a narrower upper portion. Said casing has end flaps which are folded in to close the ends thereof. The broad base of the casing is filled with concrete or other similar substance, and a strip of wood of much smaller size than the ordinary wooden tie is placed upon the concrete and bolted in place between the upper upstanding flanges. Bolted with said flanges to said wooden strip is a cover-plate also cut from sheet metal and having flanges folded over the flanges of the casing and extending down so as to rest upon the upper face of the lateral extensions of the base. Holes are bored in the cover-plate for the passage of the spikes for securing the rails to the wood portion of the tie. If desired, an additional strip of metal having one end turned up to engage the base-flange of the rails may be inserted from without between the rails and the cover-plate of the tie and secured by suitable means to said tie. Said additional plate, which may be made in various lengths to suit all conditions, adds strength to the ties and prevents the rails from spreading.

Referring more particularly to the drawings, A is the bottom of the casing. B indicates the sides or vertical portions of the broad base; C, the upper horizontal portion or step of said base, and D the upright flanges extending upward from the portions C. The bottom A is provided with end flaps *a*, and the other portions B, C, and D are also provided with end flaps *b*, *c*, and *d*, respectively. In forming the tie the flaps *b* and *d* are preferably turned in first by the use of a forming-tool, if desired. The flaps *a* are then turned up over the flaps *b*, and the flaps *c* are bent down over both. The concrete *A'* entirely fills the broad base portion of the tie and forms a solid bed for the wooden strip *A'* and anchors the tie as a whole in position. The flanges *B'* of the cover-plate *F* are secured with the flanges *D* to the wooden strip to hold the latter in place by transverse bolts passing through holes *E*. The additional plates *G*, having one end turned over at *G'*, may be made in different lengths. Thus they may

extend all the way across below both rails with their hooked or turned-over end alternating on opposite ends of the ties or sides of the track, or shorter plates, as shown in Figs. 6 and 7, may be at both ends of each tie. Said hooked plates are secured to the wood filling by means of spikes or bolts passing through holes S in said plates and other perforations registering with the first in the cover-plate. If desired, the short hooked plates may be connected together by tie-plates H, Fig. 6.

Additional bracing-plates, either straight or angular in form, may be secured in the outer top angles of the tie, as shown in Fig. 9. When said brace-plates are used, the cover-plate may be dispensed with, if desired.

It will be noted that as the casing and cover-plate are each made from single sheets the holes for the securing bolts and spikes may be marked out and bored at much better advantage before the sheet or blank is bent up. By forming the tie with a broad concrete-filled base the upper portion may be made smaller, requiring less wood without lessening the strength of the finished tie. All the ties are to be made with parts of equal size, so that if the wooden strip or any other part of a tie wears out before the other parts thereof said defective part may be replaced without the necessity of discarding the whole tie. It will be seen, however, that as the wooden portion of the tie is covered on all sides and protected from the weather to a great extent it will last much longer than the ordinary tie.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A railroad-tie comprising a casing formed with a broad lower portion or base and a narrower upper portion, a concrete filling for the lower portion and a wood filling for the upper portion and means to retain said wood filling in place.

2. A railroad-tie comprising a casing formed with a broad angular lower portion or base and a narrower angular upper portion, a concrete filling for the lower portion and a wood filling for the upper portion.

3. A railroad-tie comprising a metallic casing made from sheet metal and having its sides bent from the base first upward, then inward, and thence upward again forming a broad lower portion and a narrow upper portion, a concrete filling for the lower portion and a wood filling for the upper portion.

4. A railroad-tie comprising a metallic casing made from sheet metal and having its sides bent from the base first upward, then inward and thence upward again forming a broad lower base and a narrow upper portion, a brace-plate for the extreme upwardly-extending portion, means to secure said brace-plate to said portion, and a filling for said casing.

5. A railroad-tie comprising a metallic casing made from sheet metal and having its sides

bent from the base first upward, then inward and thence upward again forming a broad lower base and a narrow upper portion, an angular brace-plate for the extreme upwardly-extending portion, means to secure said brace-plate to said portion, and a filling for said casing.

6. A railroad-tie comprising a metallic casing made from a single sheet and having its sides bent from the base first upward then inward and thence upward again, forming a broad lower portion and a narrow upper portion, a concrete filling for the lower portion and a wood filling for the upper portion.

7. A railroad-tie comprising a metallic casing made from a single sheet and having its sides bent from the base first upward, then inward and thence upward again, forming a broad lower portion and a narrow upper portion, the extremities of said casing slit and turned inward to close the ends, a concrete filling in the lower portion and a wood filling in the upper portion.

8. A railroad-tie comprising a metallic casing made from a single sheet and having its sides bent from the base first upward, then inward and thence upward again, forming a broad lower portion and a narrow upper portion, a concrete filling for the lower portion and a wood filling for the upper portion, a cover-plate for the upper portion having flanges extending down and resting upon the upper surface of the lower portion, and means to secure said cover-plates to said upper portion of the casing.

9. The combination with a railroad-tie comprising a metallic casing made from a single sheet and having its sides bent from the base first upward, then inward and thence upward again forming a broad lower portion and a narrower upper portion, the lower portion filled with concrete and the upper portion having wood therein, of a plate having a hook at one end adapted to engage the lower flange of a rail, and means to secure said plate to the tie.

10. The combination with a railroad-tie comprising a metallic casing made from a single sheet and having its sides bent from the base first upward, then inward and thence upward again forming a broad lower portion and a narrower upper portion, the lower portion filled with cement and the upper portion having wood therein, the extremities of said casing slit and turned inward to close the ends, of a plate having a hook at one end adapted to engage the lower flange of a rail, and means to secure said plate to the tie.

11. The combination with a railroad-tie comprising a metallic casing made from a single sheet and having its sides bent from the base first upward, then inward and thence upward again forming a broad lower portion and a narrower upper portion, the lower portion filled with concrete and the upper portion having wood therein, a cover-plate for

the upper portion having flanges extending
down and resting upon the upper surface of
the lower portions and means to secure said
cover-plate to said upper portion of the cas-
5 ing, of a plate having a hook at one end
adapted to engage the lower flange of a rail,
and means to secure said plate to the tie.

In testimony whereof I have affixed my sig-
nature in the presence of two witnesses.

WILLIAM I. F. HARDEN.

Witnesses:

W. J. NELSON,
VASHTI WILCOX.