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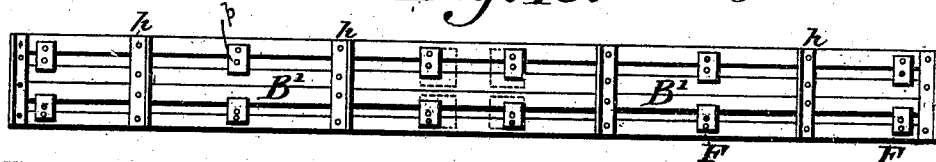
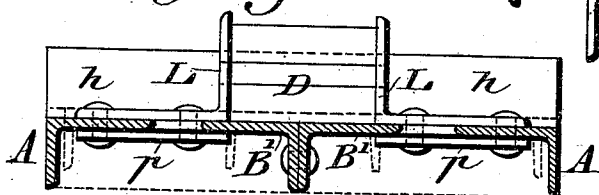
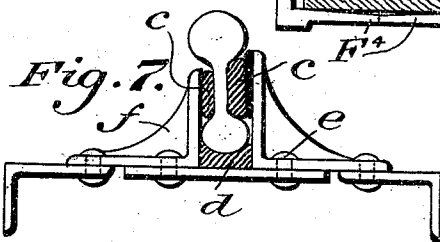
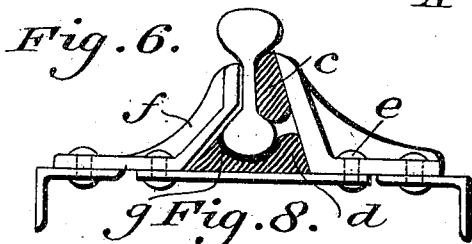
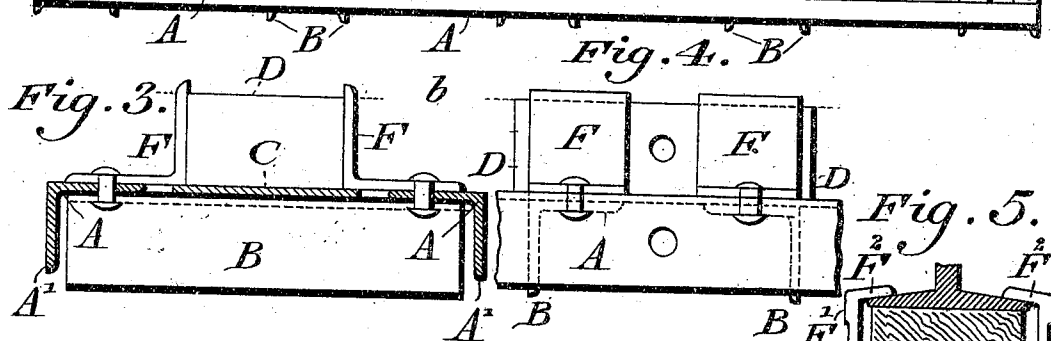
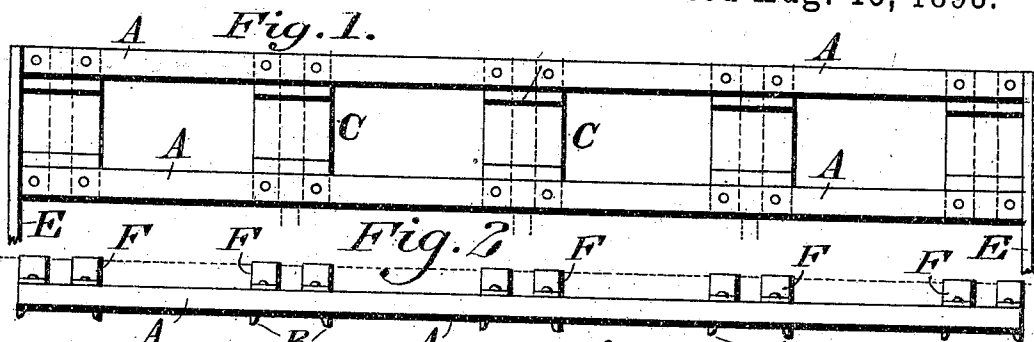
2 Sheets—Sheet 1.

J. M. PRICE.

METALLIC CROSS TIE AND RAILWAY SUPPORT.

No. 503,253.

Patented Aug. 15, 1893.



WITNESSES:

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(No Model.)

2 Sheets—Sheet 2.

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Fig. 11.

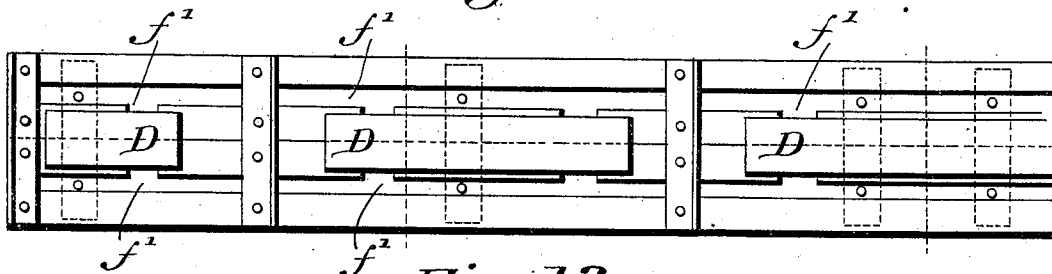
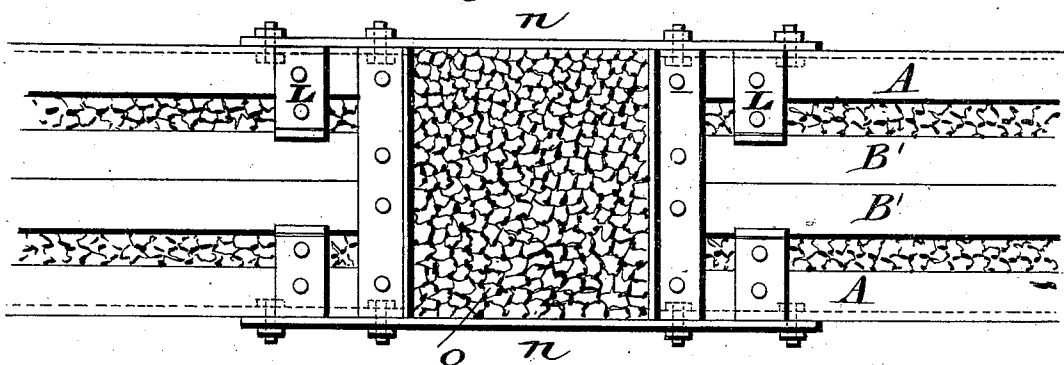


Fig. 12.



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UNITED STATES PATENT OFFICE.

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METALLIC CROSS-TIE AND RAILWAY-SUPPORT.

SPECIFICATION forming part of Letters Patent No. 503,253, dated August 15, 1893.

Application filed March 14, 1892. Serial No. 424,819. (No model.)

To all whom it may concern:

Be it known that I, JAMES M. PRICE, a citizen of the United States, residing in the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Improvement in Metallic Ties and Railway-Supports, which improvement is fully set forth in the following specification and accompanying drawings.

My invention consists of longitudinal metallic frames, beds or girders composed of angle bars, T's or channel bars, and plates of metal associated and attached together by rivets or bolts and nuts, as hereinafter described, embracing and supporting wooden blocks or their equivalents, upon which the rail is seated. These frames may be as long as the rail itself, or in sets two or three per rail length, embedded in the ballast by tamping. The rail seats will be a component part of said frames or metallic beds, and in number two or more per frame or bed, usually, however, in sets of five or seven, composing a section or completed frame, when two of these with slight intervening space between them underlie and support an entire rail length of the rail, each alternate section or frame being so adjusted in the middle as to carry and secure the meeting rails and accommodate their joint. Tie rods from frame to frame across the track, bind these firmly together, and so maintain the gage, or a transverse T or a metallic tie such as I have shown in previous patents and applications for patents, may be attached to opposite frames and used instead of the rods to perform their function and contribute to the support of the rails.

Figure 1 represents a plan of the single form of metallic frames or girders embodying my invention prior to the attachment of angles or chairs to confine rail supporting blocks in place. Fig. 2 represents a side view thereof with angles or chairs attached. Fig. 3 represents a sectional view of the frame with a cross piece beneath and a block upon the plate seated and confined between the chairs. Fig. 4 represents an enlarged view of a rail seat and its supports, together with supporting blocks. Fig. 5 represents a pair of clamps, each consisting of an upper jaw to press upon the flange of the rail, a vertical web through

which a bolt is passed, and a foot projecting inwardly and being of such length as to meet its fellow midway under the rail. Figs. 6 and 7 represent fastenings for the frame adapted to the bull-headed English rail. Fig. 8 represents in section, a double frame or girder embodying my invention. Fig. 9 represents a profile view of the frame shown in Fig. 8 on a reduced scale. Fig. 10 represents a plan view thereof. Fig. 11 represents a plan view showing notched angle bars to hold in place the clamps which embrace supporting blocks. Fig. 12 represents a plan view of another part of my invention.

Similar letters of reference indicate corresponding parts in the several figures.

Referring to the drawings: A, Figs. 1, 2 and 3 designates a pair of parallel angle bars with depending vertical sides A', and B designates cross pieces of angle bars upon which said bars A rest, and to which the latter are firmly attached by bolts or rivets. Upon these cross bars are seated the metal plates C, which form a floor or support for the cushion D of wood or its equivalent, carrying the rail. The tie rods E may be attached at each end of each frame to the same, and to the opposite frame, maintaining gage, or they may be preferably passed through the vertical flanges of the bars A for each pair of opposite frames, and adjusted by threads and nuts to the gage.

F designates chairs which rest in part upon the bars A and sides of the plates C, and are riveted or otherwise firmly secured to said bars, as will be seen in the side elevation Fig. 2, and the enlarged sectional view Fig. 3.

Fig. 4 shows the rail seat and its supports A, A', with the blocks D.

F', Fig. 5, designates clamps each having top jaws F², whose under sides are slanting and grasp the flange of a rail, the clamp having also a vertical web F³, and a foot F⁴, the latter projecting inwardly under the rail, and being of such length that one foot meets its fellow midway under the rail. The webs are pierced for the passage of a securing bolt, it being evident that when the clamps wear in use, they may be readily driven inwardly, and take fresh hold of the flange. In order to strengthen said clamps, they are ribbed at the angles of the jaws and feet.

The clamps F' are located between the chairs F , the blocks D having an opening therein for the securing bolt, see Fig. 4. In lieu of the blocks D , wooden sleepers as long as the frame may be substituted.

The dotted line b , indicates the level or plane occupied by the bottom of the rail seated upon the blocks D , between the chairs.

Figs. 6 and 7 show the fastenings for the metal frame in section, as adapted to the bull-headed English rail, e, f being modified chairs holding the rail in place, d a metal seat for the rail between them, and $c c$ wooden cushions or wedges tightening the rail on its seat. Felt $g g$ or other packing may be used between the rail and its seat, or between other parts to preclude metallic contact.

In Fig. 8, I show a double frame or double girder construction. In this case two pairs of longitudinal angle bars on each side of the track carry the rails and the weight of the train; the two central bars B', B' , being back to back, riveted together, and vertically under the rail. To secure these four parallel, longitudinal bars together, they are traversed at each end and repeatedly between the ends by cross-pieces of angle bar or T seated firmly upon the upper surface of all four, and riveted to them.

The clips F' shown in Fig. 5, may be applied to the foot of the rail and cushion, if desired, in the construction shown in Fig. 1, but are omitted in the drawings in said figure, for the sake of clearness.

Narrow plates p, p , underlie the angles or chairs L, L , and are riveted to them. See Fig. 8. In the double frame therefore, the blocks which constitute the direct support of the rail lie upon the longitudinal bars B', B' .

It will be observed that the chairs F, F , are in single pairs in this construction, and that the clamps located at f, f, f , are seated between these and the cross bars h, h, h , without being connected with either. In Fig. 11 are shown the blocks D, D , in position, also notches f', f', f' , in the edges of the angle bars B', B' , to receive and hold in place the clamps. These embrace the supporting blocks D, D , (held also in position by the nearest chairs) and clasp the rail flange above and the inside of the notch in B' , catching under the angle bar where cut.

It will be observed that a channel bar can be used in lieu of the angle bars A, A , or of the cross pieces B, B , in making up the rail seat, if punched with holes for the passage of the clamp, and that in Fig. 8, a solid T may be used to replace the central pair of angle bars B', B' .

To maintain gage, tie bars across the track from frame to frame may be used, either cross ties, T 's, flat bars rounded at each end, or round bars threaded with nuts at each end to adjust accurately, as the rail wears. These constructions will, in my judgment, produce unusual strength, elasticity, and security as metallic supports for railway rails, with per-

haps the minimum use of metal assuring such results.

The long angle bars can be slightly bent to meet the exigencies of any curve whatever in the track. Meanwhile, the vertical sides, buried in the ballast and embracing it, furnish absolute anchorage against centrifugal force or displacement. Easy and rapid laying will be another marked advantage for them, as they will come from the shop in all respects and with every detail or appurtenance ready for the placing of the rails. When laid, additional ballast may be placed upon them in a surface layer nearly up to the rail, tending to increase their weight and steadiness in the track, and prevent any metallic resonance. These frames may be attached to each other endwise or longitudinally in series by bolting flat metal plates to their sides, as at n, n , Fig. 12, so as to extend across the separating space o , and bind them in a series upon heavy grades, to prevent the creeping to which ordinary track is incident in such locations, the wide and tenacious grip of the clamp arresting the sliding of the rails. It will be observed that as these frames break joints with the rails, and the rails with the supporting frames, the result is a continuous metallic girder, firmly bound together by the clamps.

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

1. The combination of parallel angle bars having vertical limbs, cross pieces on which said bars rest, metal plates seated on said cross pieces, and tie rods, substantially as described.

2. The combination of parallel angle bars having vertical sides, cross pieces on which said bars rest, plates seated on said cross pieces, a cushion on said plates for the rail, and chairs on the bars and sides of the plate, substantially as described.

3. A double girder consisting of four angle bars of metal, the middle pair riveted to each other back to back, all four attached to several cross pieces of angle bar or T seated upon them in such manner as to bind all securely together, the structure carrying blocks of wood or its equivalent, upon which a rail is seated and secured as a railway support, substantially as described.

4. Double longitudinal girders of metal to underlie and support railway rails, consisting each of four longitudinal angle bars crossed by shorter pieces of angle bar or T seated upon and riveted to them, these girders or frames carrying chairs or angles riveted or bolted to them to prohibit the rails from spreading, in combination with blocks of wood or its equivalent, upon which the rails are seated, clamps and bolts and T bars or tie rods across the track attached to these girders to maintain gage, substantially as described.

5. A double frame or girder formed of two

pairs of longitudinal angle bars, the central pair being vertically under the rail, back to back, and riveted together, and cross pieces of angle bar seated on all of said longitudinal angle bars and secured thereto, said parts being combined substantially as described.

6. Four parallel angle bars constituting a long frame of metal when secured by bolts or rivets to transverse pieces of angle bar or T, and clamps with the middle pair notched on the edges to accommodate said clamps binding the rail placed above them upon intervening blocks of wood or its equivalent, as a railway support, said parts being combined substantially as described.

7. Longitudinal gridiron frames of metal composed of one or more pairs of angle bars, supporting between metal angles or chairs a railway rail upon blocks, secured by its flanges to the metallic frames underneath by clamps and bolts, said parts being combined substantially as described.

8. Longitudinal metallic frames consisting of a pair of angle bars, placed between a pair of angle bars, upon which metallic seats between chairs are placed to support a double headed rail wedged tightly between the chairs

with plugs or wedges of wood or metal, and tie rods maintaining gage by securing opposite frames together, said parts being combined substantially as described.

9. Longitudinal gridiron frames of metal, consisting of four parallel angle bars of the same length secured together by riveting them to cross pieces or angle bar, the middle pair supporting metal blocks on which with intervening packing is seated a double headed rail secured between metallic chairs by wedging of suitable material, the frames maintained at gage by tie-rods or T's across the track, substantially as described.

10. Longitudinal frames or girders of metal composed of a gridiron construction of angle bars, carrying a railway rail midway between chairs and connected together by clamps of wide pressure upon the flanges of the rail, and clamped or linked together endwise in series by plates, bars or clamps, to forbid creeping of the entire structure and the supported rail, substantially as described.

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Witnesses:

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R. H. GRAESER.