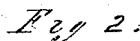
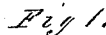


C. H. White,

No. 107643.

Patented Sept. 20. 1870.



Inventor.

Charles A. White

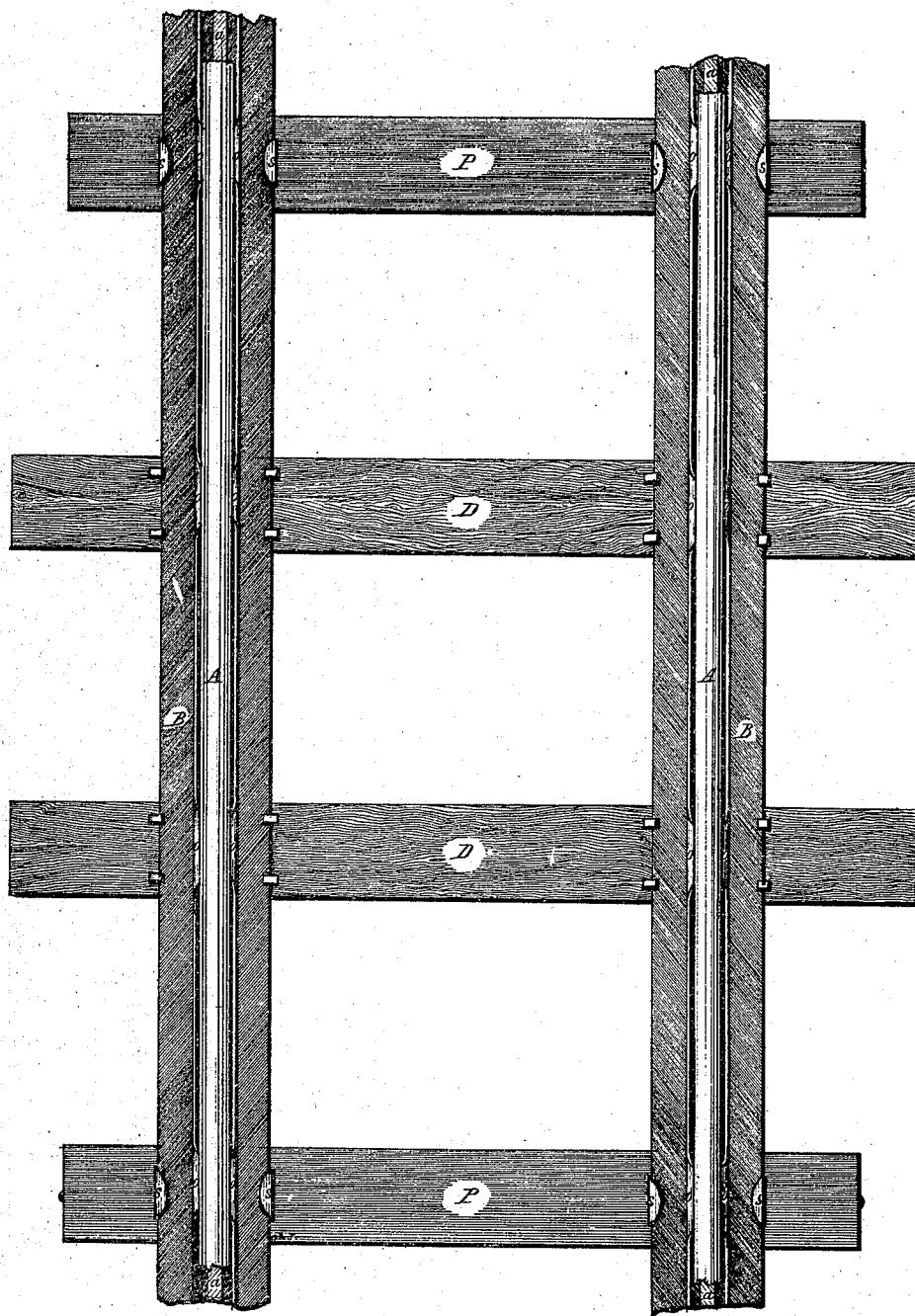
C.H. White,

2, Sheets. Sheet 2.

Railway Track.

No. 107,643.

Patented Sept. 20. 1870



Witnesses.

C. F. Cook
Otto Johnson.

Inventor.

Charles H. White

UNITED STATES PATENT OFFICE.

CHARLES H. WHITE, OF EMMETT TOWNSHIP, CALHOUN COUNTY, MICHIGAN.

IMPROVEMENT IN RAILWAYS.

Specification forming part of Letters Patent No. 107,643, dated September 20, 1870.

To all whom it may concern:

Be it known that I, CHARLES H. WHITE, of the township of Emmett, in the county of Calhoun and State of Michigan, have invented certain Improvements in Railways, of which the following is a specification.

My invention relates to the construction of a railway in which rolled-iron bed-plates (having a longitudinal saddle ridge or tongue, flanked by side ribs, formed, respectively, by the bending and fulling out of the heated metal during the rolling process) are laid on a substratum of cross-ties, or on longitudinal wooden bed-sills combined with cross-ties, prepared to resist decay, and embedded in the ballast of the road-bed. These bed-plates are designed to form a continuous chair on which to bed and confine the track-rails, which are of such relative conformation as to bestride the said ridge or tongue, and be inclosed between the ribs to resist in the most effective manner both lateral and vertical displacement without extraneous aid.

It also relates to combining with the aforesaid rails and chair bed-plates, when erected on longitudinal bed-sills, a system of locking tie-plates, by which the chair-plates are effectually prevented from being spread apart, and other important advantages secured to the road-bed.

My invention is shown in the accompanying drawings, forming part of this specification, and of which the following is a description.

Figure 1 is a partial cross-section of road-bed and superstructure of longitudinal sills and transverse tie-plates. Fig. 2 is a similar section, the chair bed-plate and rail being laid on cross-ties. Fig. 3 is a top or plan view.

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

The track-rails are represented at A, and should be rolled of steel, or of iron and steel combined in the most approved known manner. The chair bed-plates are shown at B. They are usually rolled in sections the length of the rails, and of any sufficient width and thickness to form a firm and steady support for the rail, whether erected on the wooden longitudinal bed-sills C or on the ordinary cross-ties, D.

The main (accessory) devices pertaining to

the chair bed-plate B and rail A consist as follows:

First. A longitudinal saddle ridge or tongue on the upper side of the plate, of any suitable form in cross-section, one form, which I regard the most effective, being shown at *a a a*, representing the folds of the rolled metal, by the corrugating, bending, and reducing processes in ordinary use in rolling-mills to produce analogous forms.

Second. A fulling-out tapering rib, *r*, running longitudinally on each side of the ridge and parallel with it. It being the design that a groove shall be formed in the body of the rail to fit over and bestride the ridge or tongue on the plate, it follows that the ribs must be so placed that when the rail is in place astride the saddle-tongue the base of said rail will be snugly inclosed between the ribs, the thin upper edges of which must rise somewhat above the base-flanges.

Third. When the rail-plates are designed to be laid on wooden longitudinal bed-sills, a flange, *f*, may be turned down at the outer edge, and lock-folds, as seen at *e*, on the inner edge, in addition to the appurtenances described.

The saddle-tongue on the plate B and the rail-groove may stand vertical; but it is much better (provided no insuperable difficulty exists to prevent) that the joint-lines should incline toward the center of the trackway, as shown in Figs. 1 and 2, so as to act like a dovetail in resisting the tipping-lift of the inner side of the rail by the outward thrust of the wheel-flanges. I design, however, that the solid outer ribs, *r*, shall sustain mainly the direct lateral strain, for which reason I usually make them a little stouter, and give them a deeper bearing against the rail-base, as shown. Sufficient space may be left between the tongue and the bottom of the groove to receive a wooden or more elastic filling, as at *i*, and the space inside the tongue may receive a similar one, thus excluding the entrance of water through the joints and increasing the elasticity of the track.

E is a broken section of one of the lock tie-plates, used to tie the chair bed-plates together when laid on longitudinal bed-sills C, said tie-plates being provided with a double lock-fold at each end to match and engage with the lock-

folds on the inner edges of the chair bed-plates, as at *e*.

In this mode of construction it may become necessary, in order to preserve the transverse level of the sills *C*, that they should be tied below as well as above, in which case a transverse bar or plate, *n*, with end flanges, *f'*, overlapping the chair-plate flanges, may be employed, and both be secured to the sill by the same bolt, *b*, and in addition a cross-sleeper, *F*, may be embedded at intervals for the sills to rest on.

The bed-sills should be of such length as to break joints both with the chair bed-plates and rails, and their ends had better be lapped or doweled together, and as fast as two short lines of sills are properly bedded to the line, gage, and grade, the chair bed and tie plates may be laid on and locked together, and the road-ballast filled in as the erection progresses.

The tie-plates may cover the entire area between the bed-plates, or be laid with intervals of exposed ballasting between, in which case it would be highly desirable to lay on said ballast a coating of hard and tough composition cement, flush with the iron tie-plates, in order to make the track-bed, as far as practicable, impermeable to water.

After the rails are bedded in their seats on the chair-plates the ribs *rr* must be hammered down to overlap the edges of the base-flanges of the rails at any suitable points, as shown at *o o*, &c.; but the upper edges of the ribs should be so formed in relation with the rail-base that while such oversight is amply sufficient to prevent any vertical clattering movement of the rails as a train passes over them, especially at the joints, it may yet be very readily turned back by a suitable claw-pointed lever (using the rail-head as a fulcrum) whenever it is necessary to remove a rail.

Should the chair bed-plates *B* lie on a foundation of wooden cross-ties *D*, as shown by Figs. 2 and 3, the plates will have straight plain edges; and although I have exhibited them as fastened to part of the cross-ties by common railroad-spikes, I will say here that I do not approve of their use, for they hasten the destruction of wooden ties and are uncertain, therefore dangerous, means of attachment.

Instead of employing spikes, I prefer to shorten the usual overlap of the cross-ties, square up their ends, and overlay them with longitudinal plates *P*, secured by end flanges, *f''*. The chair-plates *B* lie across these cross-tie plates, and are inclosed between two lips, *s*, formed by cutting through and turning up sections of the metal, said lips being bent down over the edges of the chair bed-plates, which effectually secures all in place.

In a construction like mine it is important, on the score of economy, that all the bed-sills or ties of wood should, before laying down, be prepared in a manner to resist decay by some well-known process for that purpose, and that the iron plates should be coated to prevent corrosion.

The chair bed-plates and rails can be easily bent in "forms" to suit curves of the ordinary radius, and it is fully expected that the seating and overlapping of the rails and plates will maintain the track in such perfect alignment as to prevent the usual side wear of the rails; but in case it should occur to any extent, the rails may be readily changed or reversed, so as to present an unworn edge to the wheel-flanges.

The principal advantages of my improved track over others are increased durability and safety by its inherent capacity to maintain against all ordinary casualties the most perfect and lasting alignment and parallelism of the rails, for they cannot spread apart, nor, if broken, get out of place and line. My arrangement is therefore specially adapted for high-speed lines, and, apart from the saving in wear and tear of rolling-stock and in other details of railway service which it is designed to effect, it dispenses with all the separate and annoying details of spikes, fish and chair plates, bolts and bolt-holes, &c.; for in my plan the means of attachment are provided for in the construction and arrangement of the rails and supporting bed-plates, and are of such nature as not to require the constant supervision and renewal by an army of track-men, as under the present system of construction.

I claim as my invention—

1. The formation of the ridge *a* on the bed-plate *B* so that it shall incline toward the center of the trackway to fit into a correspondingly-inclined groove in the rail.
2. The construction of the bed-plate *B* with the ridge *a*, either vertical or inclined, as described, and with side ribs, *rr*, which, when hammered down, secure the grooved rail on the ridge, without other fastening, against vertical as well as lateral displacement.
3. The chair bed-plates *B* and rails *A*, constructed and connected as provided in the preceding clause, in combination with longitudinal wooden bed-sills *D* and tie-plates *E*, secured, respectively, by flanges *f* and lock-folds *e*, or in other equivalent and suitable manner, substantially as for the uses specified.

CHARLES H. WHITE.

Witnesses:

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OTTO L. JOHNSON.