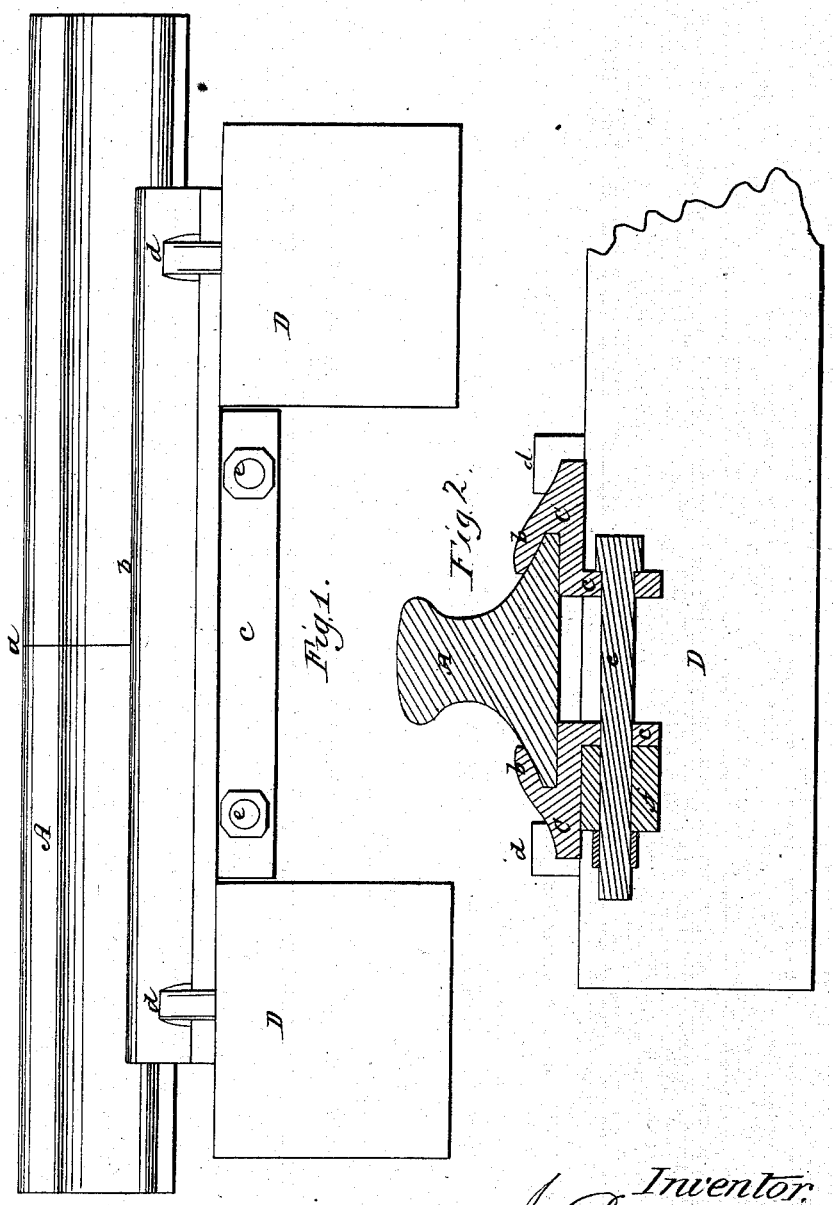
J. E. Williams.

Railroad Chair.

No. 47,484. Patented Apr. 25, 1865.



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J. E. WILLIAMS, OF XENIA, OHIO.

IMPROVEMENT IN RAILWAY-CHAIRS.

Specification forming part of Letters Patent No. **47,484**, dated April 25, 1865.

To all whom it may concern:

Be it known that I, J. E. WILLIAMS, of Xenia, in the county of Greene and State of Ohio, have invented a new and useful Improvement in Railway-Chairs; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings and letters of reference marked thereon, making part of this specification.

In my invention I use a two-part wrought chair of considerable length, with lips formed upon and extending through the entire length of either part, adapted to and firmly embracing or clasping the base of the rail, the chair, moreover, being adapted to and resting at its extremities upon separate ties, the whole being of such form and strength as to bridge the space between the two ties and afford an adequate support to the ends of the rails without offering such an inflexible resistance to the weight of passing trains as to cause a rapid lamination of the ends of the rails.

Before proceeding to describe my invention in detail, I will remark that while it is important that the ends of the rails which meet to form a continuous track should be well supported, and particularly that the two contiguous parts or ends which unite should be evenly and equally held, an inflexible support, such as is afforded by a broad cast chair of considerable weight resting upon a solid foundation, is not desirable. In such cases the chair and its foundation offer an anvil-like resistance to the action of the wheels, and the ends of the rails become very speedily crushed or laminated. A certain flexibility is therefore required, and this flexibility should, for several reasons besides that which has been named, be as near as possible the same as that which pertains to the central or other parts of the rails. Now, this support cannot in the nature of the case be afforded by a tie placed under the joint, for the rail being divided or parted at this point, its own stiffness is not so great, and more weight is thrown upon the tie. This causes the tie to become depressed very shortly, and a destructive concussion ensues when the wheels pass over the joint. Increasing the face or bearing of the tie upon the ground, if sufficient to prevent depression by the weight of the train, is almost certain to develop the other evil—that of excessive rigidity. For the purpose of securing a mean between these two extremes, to avoid a rigid inflexible support, and at the same time prevent an undue depression at the joint, numerous devices have been employed, the larger number of them being of the class denominated "fish-joints." These consist essentially in supporting the two contiguous parts by lateral supports of wood or iron, secured and clamped to one or both sides of the rail by through-bolts. These pieces by fitting snugly into the recesses in the sides of the rail contribute all their own stiffness to the rails and render the joint in most cases sufficiently rigid. The common and obvious objection to the fish-joints is the necessity of punching or drilling holes for the bolts through the body of the rail.

Another class of improvements support the joint by clamping the base of the rail in various ways, forming a "suspended joint." In these improvements as heretofore constucted the chair either rests upon a single tie or lies between two ties without resting upon either. In the first case the tie is an ineffectual support to the chair, and the latter, not being constructed to afford a support independently of the tie, necessarily fails. In the other case, the weight of the train being thrown entirely upon the lips, grooves, and clampings, the parts which receive the strain either give way or the surfaces in contact soon become abraded and fail to support the joint. In both cases the joint is inadequately "suspended."

In my invention, as will appear, the grooves which receive the edges of the base of the rails extend the whole length of the chair. The ends of the chair rest fairly upon separate ties, while the construction of the whole is such that the rails are very firmly clamped, and that part of the chair which lies between the ties and bridges the space between them is strengthened by a heavy flange, so that the part of the track where the joints occur is as firm and at the same time as elastic as any other part of the track.

In the accompanying drawings, Figure 1 is an elevation of a track supported at the joint by my improved chair. Fig. 2 is a transverse section of the rail and chair through one of the bolts by which the two parts are confined and the ends of the rails clamped.

Like letters refer to like parts in the two drawings.

The chair is in two parts, the parts being alike in form and size.

A is the rail.

a is the joint. C C represent the two parts of the chair. D D are ties.

The chair is rolled in the form represented in the sectional drawing. The length is about two feet, and the lips *b*, which form the groove into which the thin edge of the base of the rail is received, extend from end to end of the chair.

c c are flanges extending downward about two inches from the under side of the chair. These flanges are cut away and removed for about six inches from either end of each part of the chair, leaving plain faces of that length which rest upon the ties.

d d are spikes which enter the ties and confine the chair in place.

e e are screw-bolts passing through the flanges *c c*, and also through a block of wood, *f*, placed against one of the flanges, as shown. This block of wood with the parts of the flanges not removed, as above stated, falls between the ties D D, as represented in Fig. 1.

The construction and arrangement of the parts which have been specified are such that when the bolts *e e* are tightened the two parts of the chair are compressed very tightly upon the base of the rail, the joint *a* falling in the center between the two ends of the chair and midway between the ties D D. The block of wood *f* affords a cushion for the nuts, which prevents them from jarring loose. The ends of the chair rest fairly upon the ties D D, and the vertical flanges *c c* afford just sufficient resistance to the weight of the train to prevent undue depression without producing a rigidity of joint which would cause a destructive wear upon the ends of the rails.

I am aware that two-part chairs with lips embracing the base of the rail have been used. I am not, however, aware that chairs have been constructed to extend and rest upon two separate ties, with lips embracing the base of the rail through the entire distance.

I am also aware that chairs have been made with a flange or web extending below the base of the rail; but this principle of construction has been confined, so far as I am informed, to solid or single-part chairs, or at least to chairs where no end support was afforded, and in which the principle of bridging the space between the ties was not attempted, as is the case in my invention.

I am furthermore aware that blocks of wood have been employed for the purpose herein specified—that of affording a chushion upon which the nuts are tightened; but I regard the arrangement of the device herein specified as substantially different.

I desire to disclaim the devices in construction and arrangement above referred to, and restrict myself to the following, which I regard as new, and for which I desire to secure Letters Patent:

1. Supporting the joints of rails by means of a two-part chair resting upon and bridging the space between two separate ties, with lips *b b*, extending the entire length, and flanges *c c*, extending below and falling between the ties, the parts being clamped and held by the bolts *e e*, or their equivalents, substantially in the manner herein described.

2. In combination with the foregoing, the block of wood *f*, for the purpose specified.

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