Standiff & Mingis.

Railroad Rail.

No. 20,828. Patented Jul. 6, 1858.

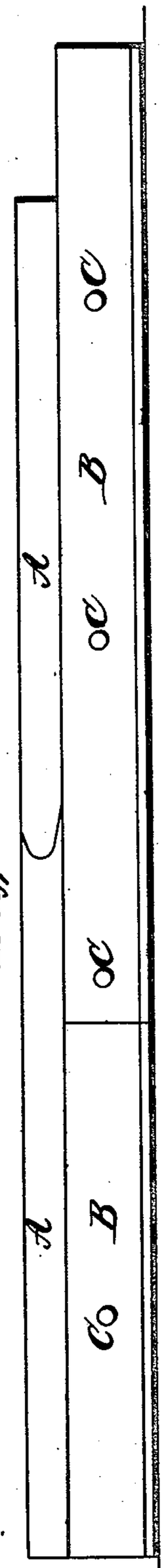

Fig. 1.

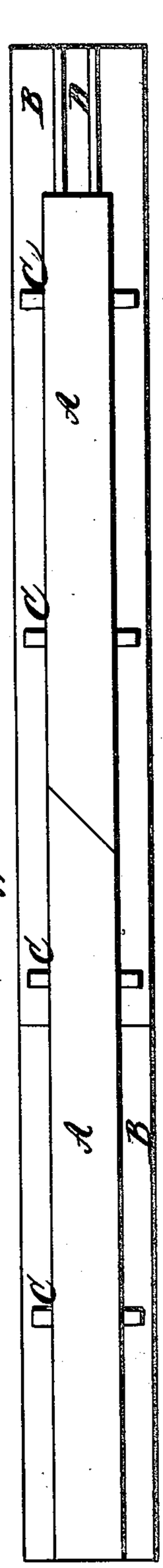

Fig. 2.

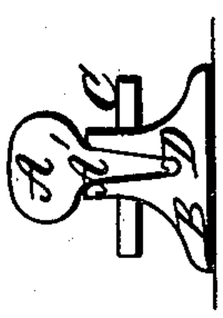

Fig. 3.

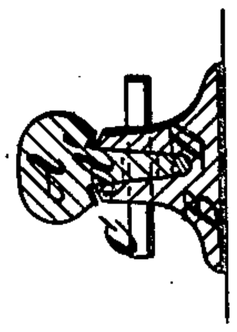

Fig. 4.

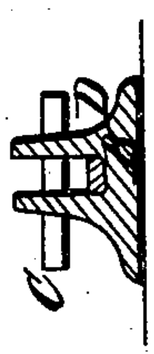

Fig. 5.

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UNITED STATES PATENT OFFICE.

C. A. STANCLIFF AND JAS. MINGIS, OF WILLIAMSPORT, PENNSYLVANIA.

CONTINUOUS-CHAIR RAIL.

Specification of Letters Patent No. 20,828, dated July 6, 1858.

To all whom it may concern:

Be it known that we, CORNELIUS A. STANCLIFF and JAMES MINGIS, of Williamsport, in the county of Lycoming and State of Pennsylvania, have invented a new and useful Improvement in Rails and Chairs for Railroad-Tracks, which we term a "Continuous-Chair Rail;" and we do hereby declare that the following is a full, clear, and exact description of the same, reference being made to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a side elevation. Fig. 2 is a plan view. Fig. 3 is an end view or transverse section. Fig. 4 is an end view or transverse section, and Fig. 5 is an end view of the continuous chair alone.

Similar letters of reference refer to like parts in all the drawings.

The nature of our invention consists in making the rail of a T section, and supporting it in continuous chairs in the manner represented, so that while the load or concussion is moderate the web rests on a continuous elastic cushion contained in the groove of the chair, and when the load or concussion becomes very great the tread of the rail rests on two continuous rigid supports (provided one on each side of the web) which sustain the rail in its proper position without allowing it to twist or bend in the least degree, and also prevent any very great compression and consequent injury of the elastic cushion.

To enable others skilled in the art to make and use our invention we will proceed to describe its construction and operation.

The tread of the rail is represented by A. This with the web A′ extending downward therefrom forms what we term the rail. It is manufactured entirely separate from the other parts, and by any of the means, and with any of the methods of piling and working the metal, now known to the art.

The base, which we term a continuous chair, is of a breadth as great as the base of ordinary rails. Its under side is plane. The edges of its base may be smooth and straight or may be notched at one or more points to receive spikes to prevent a movement either endwise or laterally on the foundation or road bed. The height of B is proportioned to its breadth about as represented. In its upper side is a deep groove adapted to receive A′, but of somewhat greater depth. Its form corresponds to that of A′. If the sides of A′ are parallel each to the other then the sides of the groove in B should be parallel, as shown in Fig. 5, but if the sides of A′ are inclined, as shown in Figs. 3 and 4 then the sides of the groove in B should be similarly inclined as represented. We insert pins or bolts C extending through both B and A′ as represented, for the purpose of confining them together. These will be more particularly described below.

In laying the track—the foundation having been properly prepared—we first secure the continuous chairs B in their proper positions, applying them with their ends nearly in contact. We then deposit in the groove of each a rope, a roll or strip of leather or hide, strips of rubber, wood or the like elastic material or several thin strips of crimped metal—it being well understood that such strips, however straight they may be, make a quite sensibly elastic foundation for any mechanical operation, and upon this elastic bed denoted by D we lay the webs A′ of the rails A. We take care to so proportion the lengths and to so lay the rails that the joints or butts of A shall not coincide in position with the joints or butts of B but that the joints of each shall always be strongly supported by the other as represented. We next by a lever or any convenient means press down the rails A with considerable force and insert the pins or bolts C in holes previously provided. These holes are of such size that the pin or bolt C is very tightly held in B but is quite loosely embraced by A′. Consequently, while C is held very rigidly, the rail is allowed to contract and expand with changes of temperature and also to rise and sink in the groove as the loads on its upper surface vary with the passage of trains. The parts C may be simple pins retained by their own friction alone, or by friction aided by a split or other key; or they may be bolts with stout heads and nuts, with the addition of a key in each outside the nut, if preferred for additional security.

In its ordinary condition the elasticity of D sustains the rail entirely, and when newly laid may urge it up with considerable force to as great an elevation as is allowed by the fastenings C; but when, by the approach of the wheels of an engine or car, the rail is very greatly loaded, the elastic bed D yields in proportion to the load, and when it becomes very excessive the under faces of A bear directly and firmly upon the top of B

and prevent a further compression. The precise extent to which it is necessary to compress D before this result takes place is not very important. It varies with the quantity of the elastic material employed in any particular instance, and also with its age, temperature, etc.

The upper surfaces of B may be level, or slightly rounded as in Fig. 3 or may be inclined as in Fig. 4. Whatever the form given, the corresponding portion of A should have a corresponding form, in order to give as fair a bearing as possible. The form shown in Fig. 4 aids in supporting the metal of B and thus in preventing the widening of the groove.

The above described rails and chairs, taken together, are intended to be somewhat heavier than the rails ordinarily employed for a similar traffic, but the expense due to this fact is more than counterbalanced. The elasticity greatly diminishes the wear and tear of the machinery running over it, particularly when the earth is stiffly frozen; the joints are prevented from sinking and the ends of the rails from being injured; the rails are kept in line with less labor, are easily taken out and replaced, and—a point of particular importance—the rail may break without getting seriously out of place. Our invention in short combines in a good degree the advantages of the various forms of compound rail, with those of the elastic chair patented by D. L. Davis in 1856.

Considering the invention as a compound rail—it possesses a valuable quality in the deadening of the vibration and thus preserving the fastenings in place and prolonging the "life" of the metal, and considered as an elastic chair it possesses qualities peculiar to itself in the protection of the elastic material from any possibility of compression beyond a certain proper extent, and in affording a continuous rigid support on each side of the elastic support, to maintain the correct position of the rail under severe strains. In these latter points lie the novelty of our invention.

Elastic material has been heretofore employed in compound rails and chairs in such manner that it has been compressed to an unlimited degree, whereas in our invention so soon as the weight or concussion upon A becomes sufficient to compress the elastic material to a certain extent, the under side of A rests continuously on the top of B on each side, and renders it impossible to compress the elastic material further. By this means the proper condition of the elastic material is preserved much longer than when the load is allowed to rest upon it with its full force. The elastic material as heretofore employed has soon lost its elasticity, in consequence partly of the immense compression to which it has been subjected. In our invention the maximum compression of the material is limited to the difference between the depth of the groove in B and the depth of the web A′, the former being always the greatest.

We are not aware that any one has before supported or proposed to support a rail on a continuous elastic bedding within a continuous chair and also provided or proposed to provide a continuous rigid support under each side of the body or tread of the rail to receive and support this portion rigidly after the elastic material has been compressed to a moderate extent, as we have done.

We do not claim the supporting of rails upon elastic material in continuous chairs but

Having now fully described our continuous chair rail what we claim as our invention and desire to secure by Letters Patent is—

The combination and arrangement of the part A A′ with the protected cushion D and with the continuous chair B which latter is adapted to form two lines of continuous rigid supports, one under each side of the body or tread of the rail whenever the elastic material is compressed to a certain extent, substantially as above described and for the purpose set forth.

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