

(No Model.)

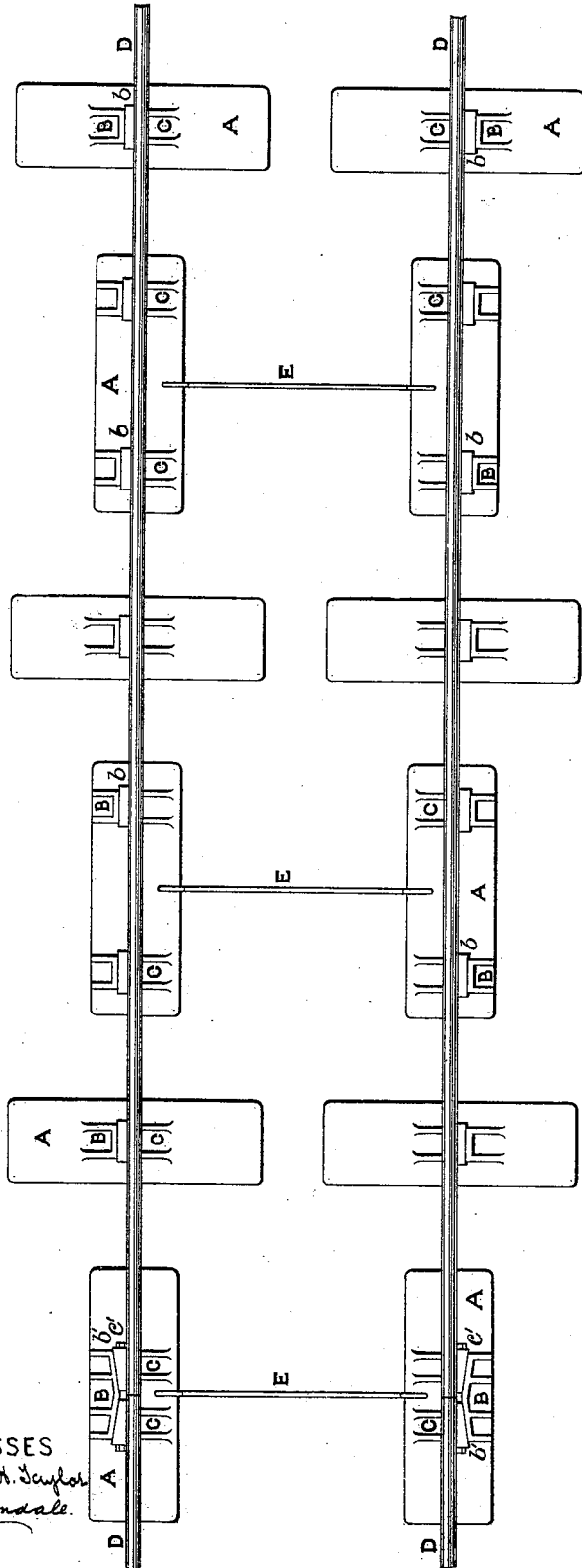
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S. RIDEAL.
PERMANENT WAY FOR RAILWAYS.

No. 508,243.

Patented Nov. 7, 1893.

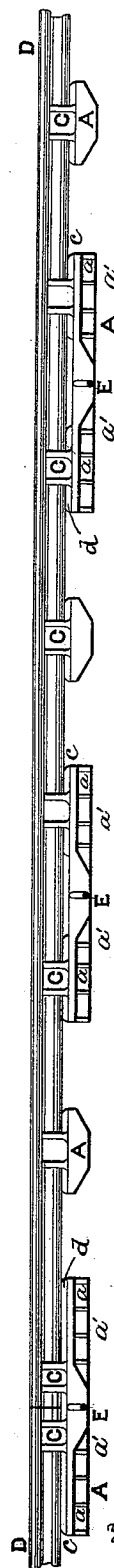
FIG. 1.



WITNESSES

William H. Taylor
Chas. Overdale.

FIG. 2.



INVENTOR

S. Rideal

By W. H. Taylor
att'y.

(No Model.)

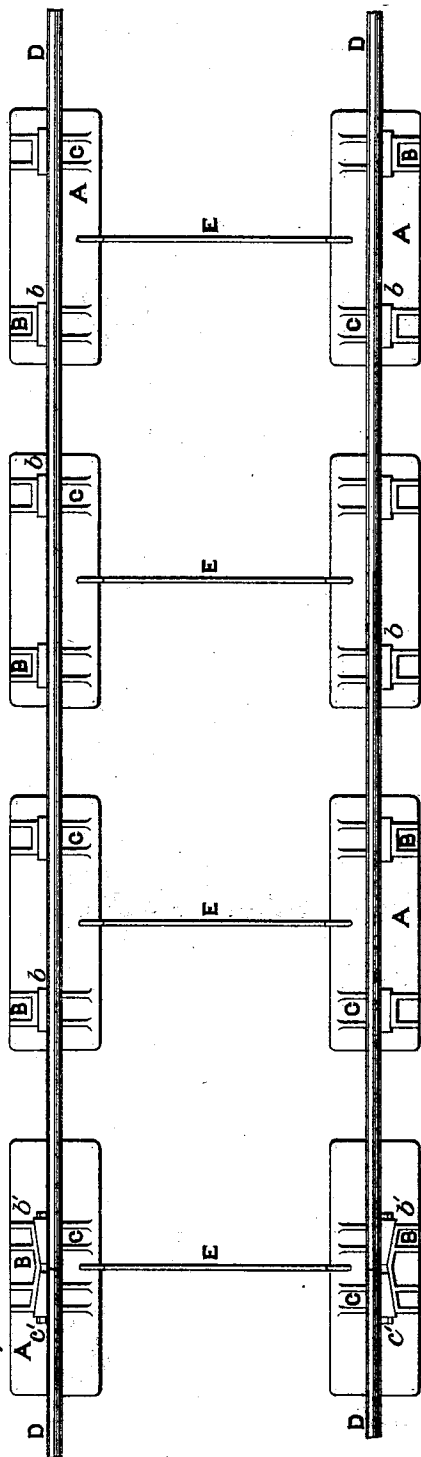
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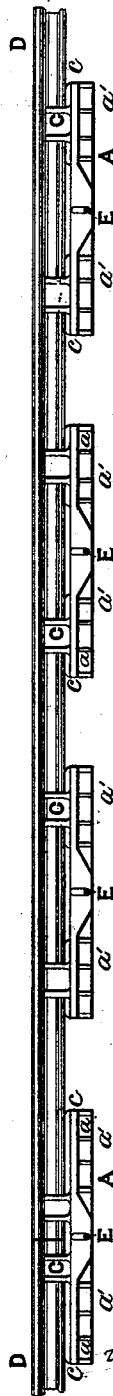
FIG. 3.



WITNESSES

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FIG. 4.



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(No Model.)

4 Sheets—Sheet 3.

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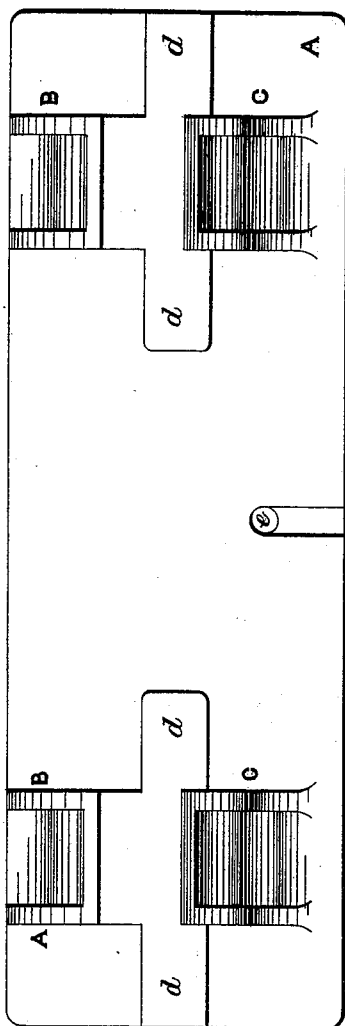


FIG. 6.

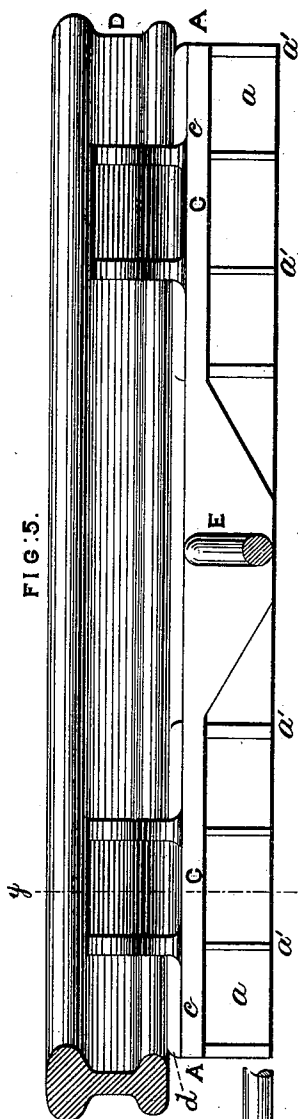


FIG. 5.

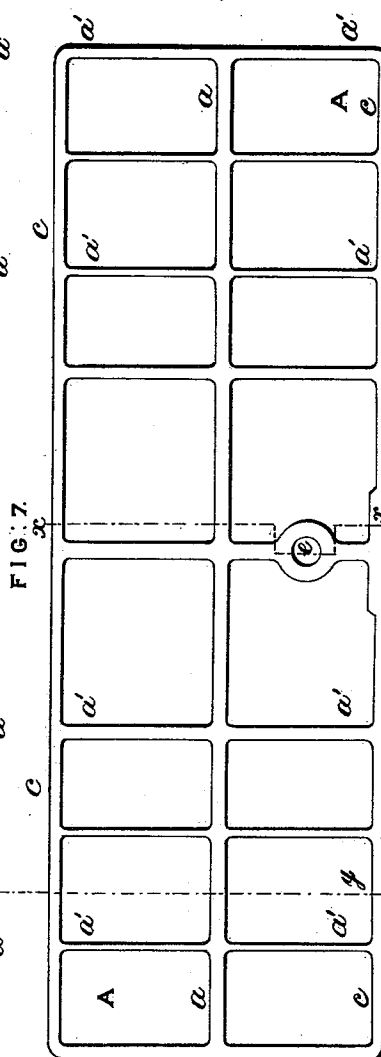


FIG. 7.

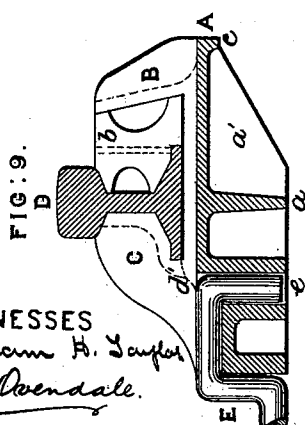


FIG. 9.

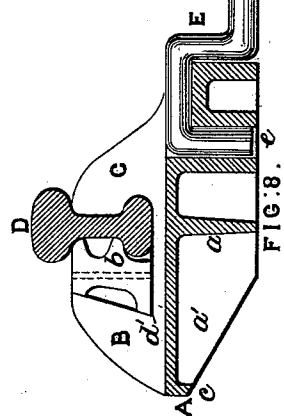


FIG. 8.

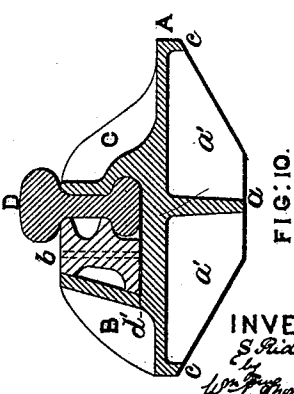


FIG. 10.

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4 Sheets—Sheet 4.

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FIG. 12.

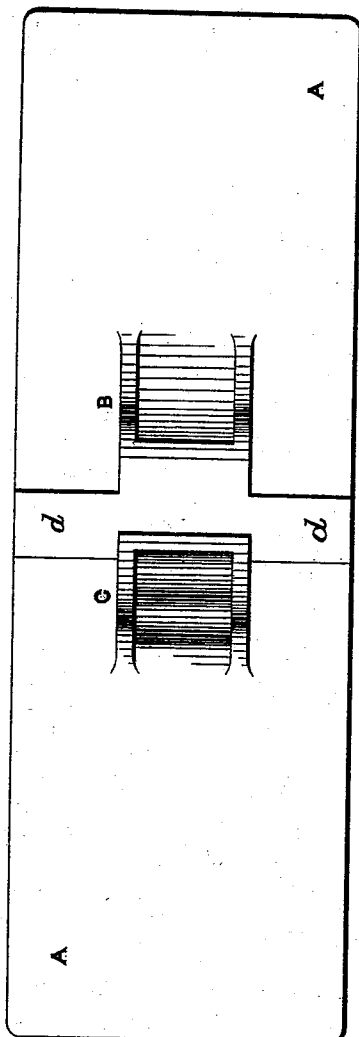


FIG. 11.

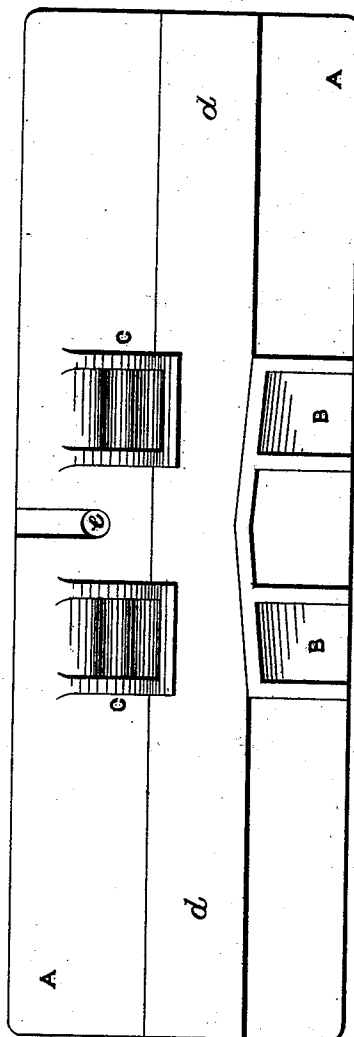


FIG. 14.

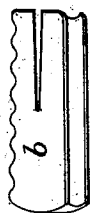


FIG. 13.

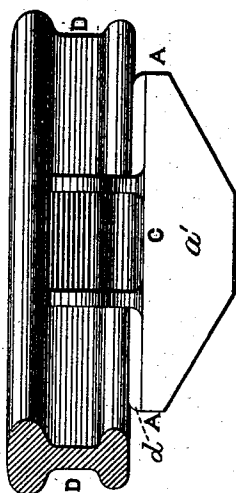
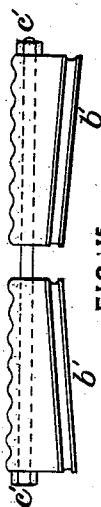


FIG. 15.



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UNITED STATES PATENT OFFICE.

SAMUEL RIDEAL, OF MANCHESTER, ASSIGNOR TO THE SAMPAN PATENT RAILWAY SLEEPER AND STEEL PLANT SYNDICATE, LIMITED, OF STALYBRIDGE, ENGLAND.

PERMANENT WAY FOR RAILWAYS.

SPECIFICATION forming part of Letters Patent No. 508,243, dated November 7, 1893.

Application filed June 27, 1891. Serial No. 397,746. (No model.) Patented in England December 19, 1890, No. 20,761; in France June 18, 1891, No. 214,269; in Germany June 18, 1891, No. 60,141; in Italy July 15, 1891, No. 30,100; in Belgium July 15, 1891, No. 95,624; in Austria-Hungary October 12, 1891, No. 50,919 and No. 29,350; in Spain November 7, 1891, No. 12,324, and in India June 2, 1892, No. 204.

To all whom it may concern:

Be it known that I, SAMUEL RIDEAL, engineer, of Manchester, in the county of Lancaster, England, have invented certain new and useful Improvements in Permanent Ways for Railways, of which the following is a specification.

This invention, patented in England December 19, 1890, No. 20,761; in France, June 18, 1891, No. 214,269; in Germany, June 18, 1891, No. 60,141; in Italy, July 15, 1891, No. 30,100; in Belgium, July 15, 1891, No. 95,624; in Austria-Hungary, October 12, 1891, No. 50,919 and No. 29,350; in Spain, November 7, 1891, No. 12,324; and in India, June 2, 1892, No. 204, relates to improvements in the permanent way for railways in which combined metallic sleepers and chairs are used, the sleeper and chair being cast or formed in one piece and each sleeper being coupled by means of a tie rod or bar with the corresponding sleeper on the opposite rail. It is designed with the object of providing an extended bearing or supporting surface upon the sleepers for the rails; of diminishing the number of the component parts; of reducing both the cost of manufacture and the cost of maintenance; and of producing sleepers and chairs that will wear equally as well and as long as steel rails and capable of holding the rails with increased security and of being easily handled and removed.

I make the improved sleepers and chairs either of rolled, pressed, or cast metal, preferably of mild cast steel or tough cast iron with one, two or more chairs on each sleeper, the rails being secured to the chairs by means of keys or wedges or other similar devices capable of being quickly inserted in position and of being removed and replaced as required.

The surface which supports the rail or upon which the rail rests extends in the longitudinal direction of the rail at each side the chair and affords an increased bearing surface to support the rail.

The invention will be fully described with reference to the accompanying drawings.

Figure 1, is a plan of permanent way constructed according to my invention; Fig. 2, side elevation of same; Fig. 3, plan of permanent way showing all the sleepers laid longitudinally; Fig. 4, side elevation of Fig. 3; Fig. 5, side elevation of longitudinal sleeper and chair with rail in position; Fig. 6, plan of longitudinal sleeper; Fig. 7, plan from below of sleeper; Fig. 8, transverse sectional elevation of sleeper and rail on line $x-x$ showing double headed rail; Fig. 9, transverse sectional elevation showing single headed rail; Fig. 10, transverse sectional elevation on line $y-y$ showing double headed rail; Fig. 11, plan of sleeper in which the rails are joined; Fig. 12, plan of cross or transverse sleeper; Fig. 13, end elevation of transverse sleeper with rail in position; Fig. 14, plan of wedge for securing the rails in position in the chairs; Fig. 15, plan of double wedge for forming the joints of the rails in the chairs.

The sleeper A is formed of a thin cast foundation plate upon the upper surface and formed in one piece with which are the two fixed jaws, B and C which form the chair to receive and hold the rail D. The under surface of the sleeper A, is formed with a longitudinal rib a , cross ribs a' , and a rim or shallow flange c , at each edge. The cross ribs a' are preferably of the form shown in Figs. 10 and 13 inclined at such an angle as to readily allow of the packing of the ballast under the sleeper when it is in position. These ribs and flanges serve to give anchorage or holding and to retain the ballast underneath the sleepers and prevent its being pumped or forced out by passing traffic. The rims or shallow flanges at the edges also serve to retain the air between the surface of the ballast and under side of the sleepers whereby an elastic cushion is formed and thus smooth silent running for the rolling stock is attained. The rail D is held in the chair formed by the fixed jaws B and C by a wedge b driven in be-

tween the rail and the jaw B and it rests upon a supporting surface d which is extended for some distance at either side of the jaws to present a considerable bearing surface at each sleeper and chair for the rail to rest upon.

The sleepers are laid in pairs and either each alternate pair or each pair of sleepers are connected together by a tie bar E, which holds them together and prevents any alteration of the gage. The bar E, is bent or cranked at each end which fits into a hole e formed in the sleeper. The bend or crank in the tie bar E, is preferably such that the bar will lie beneath or embedded in the ballast. These combined sleepers and chairs are made in three forms which are used together conjointly to give support to the rails and to secure them in position, two of them running longitudinally with the rails and the other transversely therewith. For narrow gage or light railways the two longitudinal forms only may be used.

The first form or joint sleepers shown in Fig. 11, are preferably constructed to be laid longitudinally with the rails and are provided with the jaws B and C so placed as to form either a single chair or two chairs placed side by side to receive the rail ends and joint them firmly together. The ends of two rails are brought together in the center of the double chair and are secured tightly therein by means of two tapering wedges b' entering from different sides of the jaws B which are also inclined. The wedges b' are drawn together and tightly held between the jaws B and the rail D by a long bolt c' passing through them from end to end and secured by an elongated nut or other suitable means. By this means the rail ends are firmly secured in the jaws B and C of the sleeper A, and the use of fish plates and the punching of holes in the rails are avoided. The joint sleepers are connected together in pairs by the tie rods E. The bearing surface d upon which the rail rests extends from the chair to the outside edge of the sleeper.

The second form or intermediate longitudinal sleeper as shown in Figs. 5, 6 and 7, is formed with two sets of jaws B and C forming two chairs at some distance apart with a space between them to which the rail D is attached by the keys or wedges b . The bearing surface d extends out at each side of the jaws B and C forming a considerable surface upon which the rail D is supported. These sleepers are also connected together in pairs by the rods E.

The third form or intermediate cross sleeper as shown in Figs. 12 and 13, is formed with one set of jaws B and C to form a chair placed cross wise in the center and with the rail bearing surface d extending the entire width of the sleeper. These sleepers are laid transversely with the rails and alternately with the longitudinal sleepers as shown in Figs. 1 and 2, and serve in conjunction with the lon-

gitudinal sleepers to give greater stability and endurance to the permanent way. They may if desired be connected together in pairs by short tie rods similar to E or they may be used without any such connections.

For narrow gage and light railways the transverse sleepers may be dispensed with and the longitudinal sleepers may be employed as shown in Figs. 3 and 4.

The wedges or keys b b' are preferably made of mild cast steel and are formed with corrugations on the face which come in contact with the rail so as to allow for any unevenness on the rail surface and the single wedge b has a slot run through it at the narrow end to form a spring to give a better grip when inserted. Between the rail D and the surface d on the sleeper A upon which the rail rests I place a piece of felt or thick woven or other suitable material d' to prevent jarring between the two metallic surfaces and the consequent noise which would otherwise occur. By thus arranging and connecting together the several parts constituting the sleepers and the rails the strains thereon caused by the passing traffic are in compression only and there is freedom from tension or buckling, each line of rail being free or independent and not affected by any undue settling down or strain upon the other. For this purpose the tie rods E which maintain the gage of the road are fitted loosely into the sleepers and being embedded in the ballast are out of harm's way when in position. The weight and number of parts constituting the chairs and sleepers being thus reduced to a minimum the utmost economy in first cost and in the cost of maintenance of the road and also of the rolling stock will result by the use of my invention as the whole surface of the sleepers and the increased bearing surface (d) for the rails will enable them to sustain heavier moving loads without increasing the section and weight of rails at present employed.

What I claim, and desire to secure by Letters Patent, is—

1. A permanent way of railways constructed with combined sleepers and chairs of soft cast steel, the sleepers being placed alternately longitudinally and transversely and each provided with chairs formed integrally upon it in which the rails are secured by cast steel wedges, substantially as described.

2. In the permanent way of railways the combination with the rails of the joint sleepers, the intermediate longitudinal sleepers and the intermediate transverse sleepers, the longitudinal sleepers being connected together in pairs by the rods E substantially as described.

3. In a metallic sleeper for the permanent way of railways the combination with the base plate A and ribs a a' of the jaws B and C and the rail supporting surface d extending at each side of the chairs substantially as described.

4. In a metallic sleeper for the permanent way of railways the combination with the base plate A and ribs *a a'* of the fixed jaws B and C forming chairs the rail supporting surface *d* the rail D and the wedges *b* substantially as described.

5. In a metallic sleeper for the permanent way of railways the combination with the base plate A and ribs *a a'* of the fixed jaws B and C forming a double chair the rail supporting surface *d* the rail D and the double wedges *b'* drawn together by a bolt substantially as described.

6. In a metallic sleeper for the permanent way of railways the combination with the base plate A and ribs *a a'* of the fixed jaws B and C forming chairs the rail supporting surface *d* the rail D and the tie rods E substantially as described.

7. In the permanent way of railways the combination with the rails D of combined sleepers and chairs placed alternately longitudinally and transversely, the transverse sleepers having each one pair of fixed jaws

forming a chair and the longitudinal sleepers each two or more fixed jaws forming the chairs and being connected together in pairs by tie-rods E substantially as described.

8. In a metallic sleeper and chair combined the combination with the base A and fixed jaws B and C of the rail bearing surface *d* extending at either side of the chairs substantially as described.

9. A metallic wedge of soft cast steel for the chairs of metallic sleepers, formed with a corrugated surface and a longitudinal cut or slot extending from the front end toward the base to give elasticity and spring to the end of the wedge, substantially as described.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 8th day of January, 1891.

SAML. RIDEAL.

Witnesses:

J. OWDEN O'BRIEN,
WILLIAM H. TAYLOR.