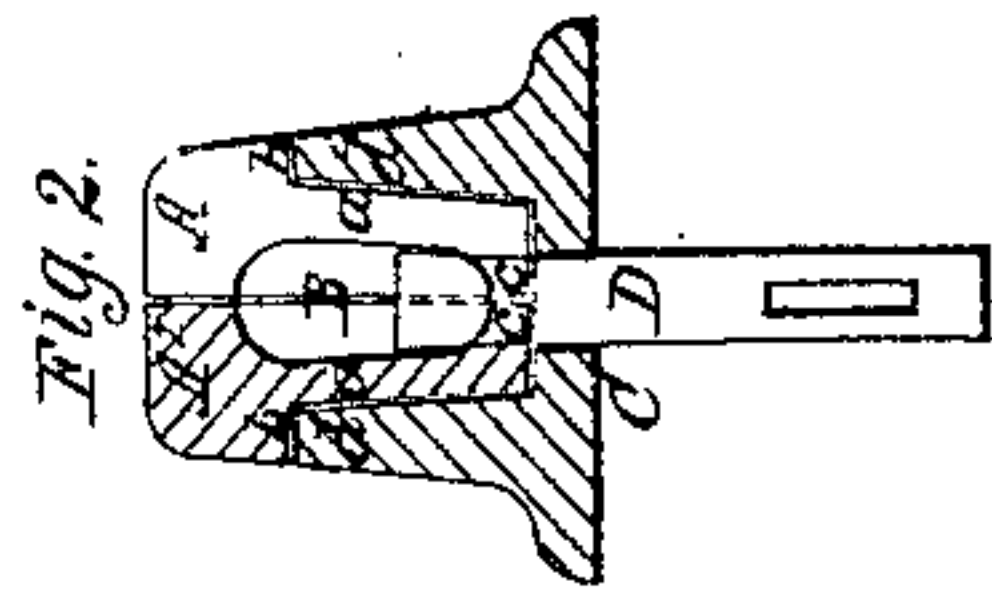
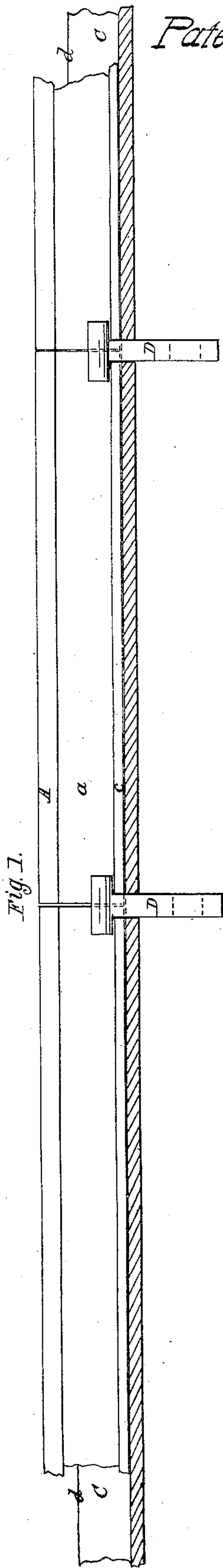
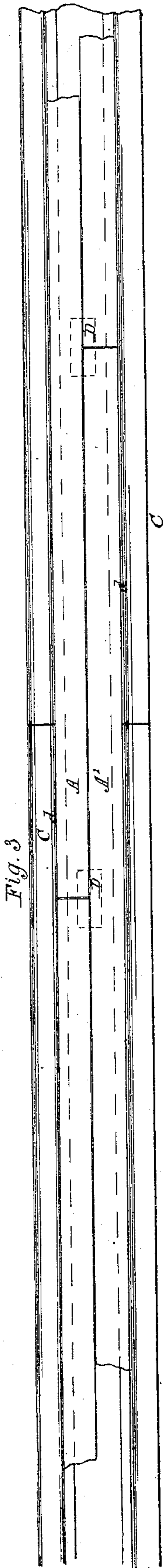


R. H. Middleton.

Railroad Rail.

N^o 9,755.

Patented May 31, 1853.



UNITED STATES PATENT OFFICE.

RD. H. MIDDLETON, OF ALEXANDRIA, VIRGINIA.

COMPOUND RAIL.

Specification of Letters Patent No. 9,755, dated May 31, 1853.

To all whom it may concern:

Be it known that I, RICHARD H. MIDDLETON, of the city and county of Alexandria, in the State of Virginia, have invented certain new and useful Improvements in Compound Rails for Railroads, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing, which forms part of this specification, and in which—

Figure 1 is a longitudinal section taken centrally through my improved compound rail and showing the arrangement of the bolts for securing the rail to the sleepers; Fig. 2 is a transverse section, and Fig. 3, a top view or plan illustrating the arrangement of parts in the compound rail for breaking joint.

In the construction of what are termed "split-rails" for rail-roads, transverse horizontal bolts, or their equivalents, have hitherto been employed for holding the separated parts or contiguous half-rails together: These rails are formed of two bars of symmetrical construction, bolted together side by side, resembling, when thus united, solid continuous rails. Such rails possess an advantage over the solid rails, in so much that they may be constructed without any thorough break or joint across them, the adjoining halves of the several lengths being fitted together so as to break joints, thus presenting the same provision for expansion and contraction of the rail as is admitted by the spaces between the lengths of the ordinary solid rail, but, by dispensing with the thorough cross break or joint, giving increased rigidity to the rail against the lateral strains produced by the vibration or side movement of a train in rapid motion.

Other advantages are to be obtained from the use of split-rails constructed as described, but two prominent evils present themselves: These are, first, the thorough or continuous longitudinal split or joint down their center which tends to admit of unequal deflection in the rail between the chairs or cross sleepers, the weight of the train, by resting on the inner half of the split rail, throwing the strain upon the bolts that tie the split rail, thus loosening and not infrequently shearing off the bolts; and secondly, the liability of the split rail to open or separate at the top and between the several tie bolts, however frequent or numerous such bolts may be.

To obviate these evils of the ordinary split and solid rails and to combine, in an enlarged degree, the peculiar advantages of both of them, is the object of my invention which consists in the following construction and arrangement of a tripart rail, the two upper portions of which resemble the ordinary split rails and the third or lower part being a continuous box or case rail to contain and bind together the two upper parts, whereby increased rigidity is given to the line of rail and all thorough breaks or joints, whether vertical or horizontal, are avoided: Either half (A or A¹) of the upper, which I shall call the split rail, is formed of a bar or side (a), provided with a rib, on the top, projecting over either side and forming a shoulder (b) on the outside: The bar (a) has a further rib or flanch (c) projecting from the inside at the bottom; the top surface of this flanch forms a hollow curve or seat for the heads of the holding down bolts, and the inner edge of the flanch is vertical and in the same line as the inner vertical edge of the top rib of the side (a), so that when the half rails A and A¹ are placed in their position as in Fig. 2, they have a tubular channel (B) between them.

The half rails A and A¹ are seated, as in Fig. 2, with their inner vertical edges adjoining, within the lower part which I shall call the box or case rail (C), the shoulders b of the half rails sitting on the top surfaces or edges of the sides (d) of the case rail, and the half rails further resting at their bottoms on the interior horizontal surface connecting the sides d. The inner faces of the sides d are not parallel but slightly incline toward one another from the top to the bottom in order to facilitate the easy entrance and removal of the half rails whose backs, or outer surfaces of the sides a, similarly incline, so that when the half rails are fitted within the case rail there is no side play or shake.

The base of the case rail is broad, projecting beyond and forming a flanch on the outside of either side d, in order that a good bearing surface may be given to the rail, the said base or bearing surface resting, without the necessity of chairs to support it, on the cross ties or sleepers of the railroad.

The continuous case rail and half rails are made in any suitable lengths; they are arranged with relation to each other so that they break joints one with another, as repre-

sented in Fig. 3, the several lengths of the half rails breaking joints with each other as already described in the construction of split rails and further breaking joints with the several lengths of the continuous case rail, so that all thorough breaks or joints in this compound rail are avoided, both transversely and longitudinally, whereby increased rigidity is given to the rail both against lateral play and unequal deflection, and no separating or opening of the half rails can occur as the sides of the case rail which bind them are continuous, thus dispensing with horizontal tie-bolts and giving a firmer support to the half rails not only against lateral play but vertically, as, by the half rails resting on the sides *d* and bottom of the case rail, the strain produced by the weight of the train will be transmitted to the case rail and be borne by it in combination with the half rail.

When the inner edge of the top rib of the inside or one half rail becomes worn by the rubbing of the flanches of the car wheels against it, the outside half rail may be substituted for the former inside one which may be reversed and placed on the outside, thus increasing the durability of the rail.

To secure this compound rail to the sleepers, bolts (D), having semicircular heads corresponding to the hollow curved surface of the combined top faces of the flanches *c*, pass through the bottom of the half rails, case rail and sleeper and are

wedged, keyed or screwed up from underneath. The semicircular form of the heads of the bolts, and their bearing surface or surfaces, serve to prevent the jarring of the rail from injuring the heads. Thus the one set of bolts tie the half rails to the case rail and unite them all to the sleepers. A thin felt or other packing may be introduced between the sides *d* and the half rails and under the bottom of the latter to relieve the rail of all friction and jar arising from the inequalities in the adjacent bearing surfaces of the said parts. As no thorough break or joint occurs in this compound rail, increased safety as well as rigidity and evenness of surface will be insured by its adoption.

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

The combination of the continuous case rail with the split rail, the halves or parts of the latter being constructed with shoulders that rest on the sides of the case rail while their lower edges fit into and rest upon the bottom of the same and the whole being arranged substantially as shown and described.

In testimony whereof I have hereunto subscribed my name.

RHD. H. MIDDLETON.

Witnesses:

J. LOUIS KINZER,
ROBT. H. MIDDLETON.