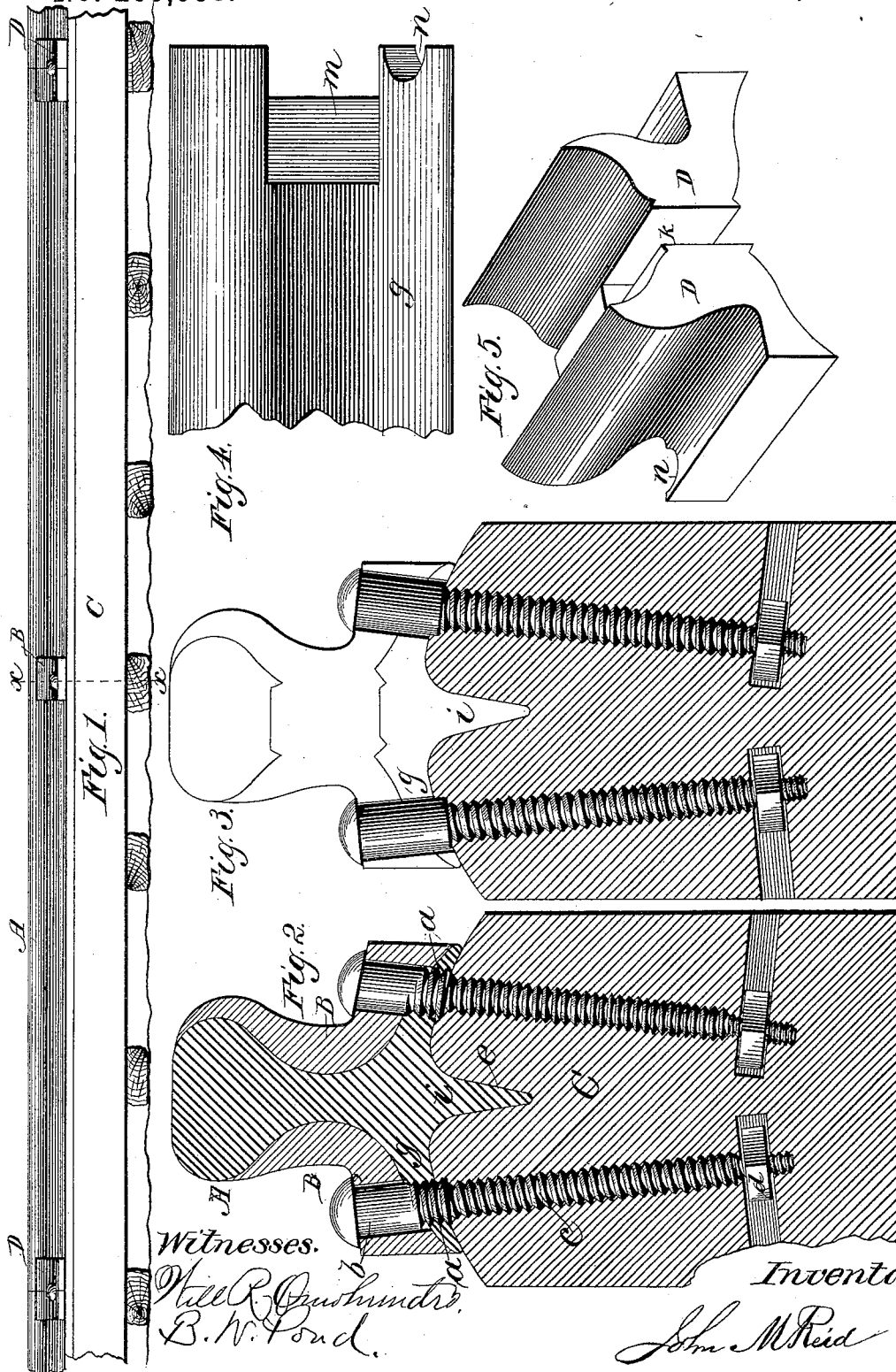


(No Model.)

J. M. REID.
RAILROAD.

No. 265,538.

Patented Oct. 3, 1882.



UNITED STATES PATENT OFFICE.

JOHN M. REID, OF ALLEGHENY, PENNSYLVANIA.

RAILROAD.

SPECIFICATION forming part of Letters Patent No. 265,538, dated October 3, 1882.

Application filed February 20, 1882. (No model.)

To all whom it may concern:

Be it known that I, JOHN M. REID, of the city and county of Allegheny, State of Pennsylvania, have invented a new and useful Improvement in Railways, of which the following is a specification, reference being had to the accompanying drawings, forming part thereof, in which—

Figure 1 is a side elevation; Fig. 2, a cross-section of the rail and its fittings on line *xx* of Fig. 1. Fig. 3 is a similar section through the joint of two abutting rails; Fig. 4, a side view of the rail ends; and Fig. 5 is a perspective of the joint-stay.

In order that others may be enabled to discern between what is practiced and my improvements, I wish to state, first, that in the great hurry to get railroads built it has often happened that ties have been thrown down (on rough unprepared ground) to the number of three thousand per mile of single track, containing upward of ten thousand cubic feet rough unseasoned timber, the rails spiked to the ties without adjustment, so that men are required daily to keep the road in workable order, the ties in their natural unseasoned state, often twisted and difficult, if not impossible, to make a smooth and substantial railway of, after a great amount of trouble and attendance, causing great waste and expense; secondly, it has long been the practice to make elliptic or oval holes near the ends of rails, with corresponding holes in the fish-plates or side bars. Bolts are then put through both rails and fish-plates, often preventing expansion and contraction.

The object of my invention is to produce a better railway, more reliable and safer than heretofore, without lateral or vertical motion, having the road-bed properly drained, and made smooth by heavy rollers or otherwise, so as to prevent ballast from sinking into and mixing with the road-bed. Above such smooth and adjusted road-bed I lay down a substantial layer of firm ballast, which is also made smooth for the superstructure.

Instead of using and wasting so much timber in ties, as stated above, I do not use more than nine hundred ties per mile of single track; nor need they be more than seven feet long by five inches square, in whole little over

one thousand cubic feet. Then I lay timber cushions or beams *C* under both rails lengthwise—say twelve inches deep by six inches thick—said beams having a lengthwise groove, *e*, to receive the diaphragm of the rails, completing both ties and cushions with not more than six thousand three hundred cubic feet, all preserved and charred, (preferably by my patent, granted me 8th September, 1874,) which preserves both wood and iron. Acids and every matter which wastes iron should be scrupulously avoided. The preserved ties and cushions are then laid down and fastened to each other securely, so as to remain at exact gage or width for the rails. The crown or upper part of my rail *A* most subjected to friction I make deeper than usual and nearer to bed-plate or base *g*, which I make broader, drooping, and thinner at the outer edges, and with a lengthwise diaphragm, *i*, below to resist lateral pressure. The rails are then easily laid down and fastened at or near middles through their bed-plates into or through the timber below.

My method of fastening rails at or near their middles is to form a screw-threaded hole, *a*, through the base on each side, and above such hole place a stay-piece, *B*, as shown, said stay-piece having a smooth hole corresponding with the hole *a* through the rail-base. The bolts are formed with a smooth neck, *b*, next under the head, a length equal to the thickness of the stay. They are then screw-threaded a length equal to the thickness of the rail-base to screw into said base. The main portion *c* of the bolt is threaded to screw into the beam *C* beneath the rail, and the lower end is threaded to enter a nut, *d*, sunk in the beam, as before described.

My safety stay-coupling consists in short pieces *D* of cast-steel or other suitable material, in substantially the form shown, (see Fig. 5,) fitted and inserted in the abutting ends of the rails by dovetails or otherwise, (see Figs. 4 and 5,) so that when in place they will have no vertical or lateral play therein. The intermediate part of each such stay is cut out for about half its length, as at *k*, the web of the rail *m*, to which it is applied, being cut out to receive the remainder of said middle part, so that the ends of each rail and its stay-piece shall be flush and smooth. On each side of

the rail a semicircular recess or half-hole, *n*, is made through the rail-base and stay-piece at the end, said recesses in the abutting rail ends and stay-pieces at a joint registering accurately, so as to form a hole to receive a bolt, which is threaded to enter into the beam beneath the rail, and at its extreme end to enter a nut embedded in said beam.

My coupling prevents lateral and vertical motion of the rails, which are free to contract and expand lengthwise. It is more reliable, lighter, cheaper, and safer than fish-plates and bolts now in use, which often prevent contraction in rails during time of frost, thereby causing great loss of property.

In using my coupling rails of unequal heights can be adjusted and made level on top by filling-strips interposed between the rail and the timber-cushion.

Railroads made as hereinbefore described will be found cheaper in first cost, more durable, easily maintained, and safer than others. Less material and fewer workmen will be required for repairs, dangers will be reduced, and accidents avoided. The whole plant, stationary and movable, can be kept at much less cost, and will be safer and more comfortable for passengers.

Having thus described the nature, construction, and operation of my invention, I do not

confine myself to their exact detail in every case.

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

1. In a railway, the combination of the ties and beams, preserved as set forth, and the rails having the downwardly curved or drooping base-flanges and the lengthwise diaphragm below the same, as set forth.

2. A railroad-rail having curved or drooping base-flanges and a central longitudinal diaphragm below said base, as shown and described.

3. The herein-described middle fastening of the rails, consisting of the stays applied to the rail between the crown and the base, and the bolts applied substantially as shown and described.

4. The herein-described joint-fastening, consisting of the stay-pieces combined with the rails, substantially as described and shown, and having, with the rails, the registering half-holes and the bolts, as and for the purposes set forth.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN M. REID.

Witnesses:

LIZZIE NIELLIE,

WM. D. CUNNINGHAM.