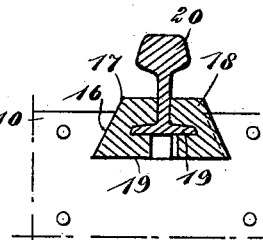
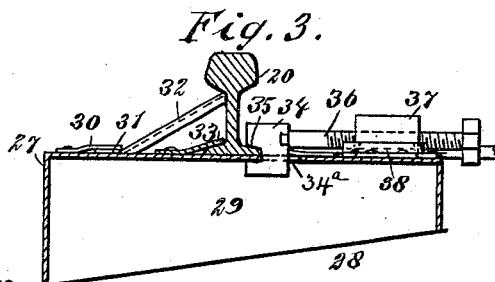
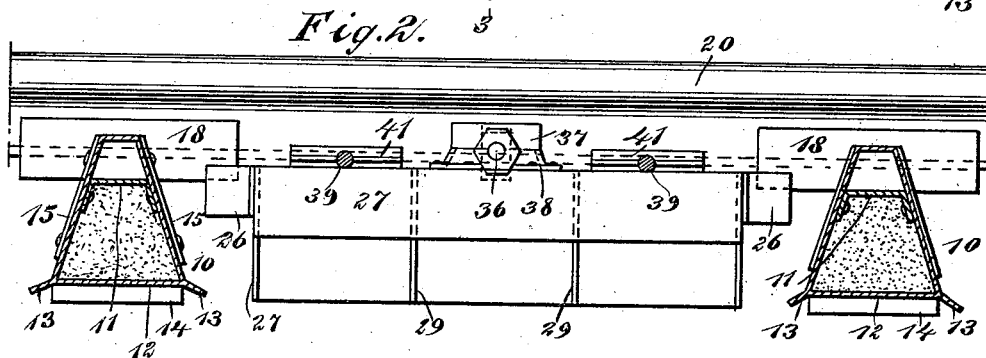
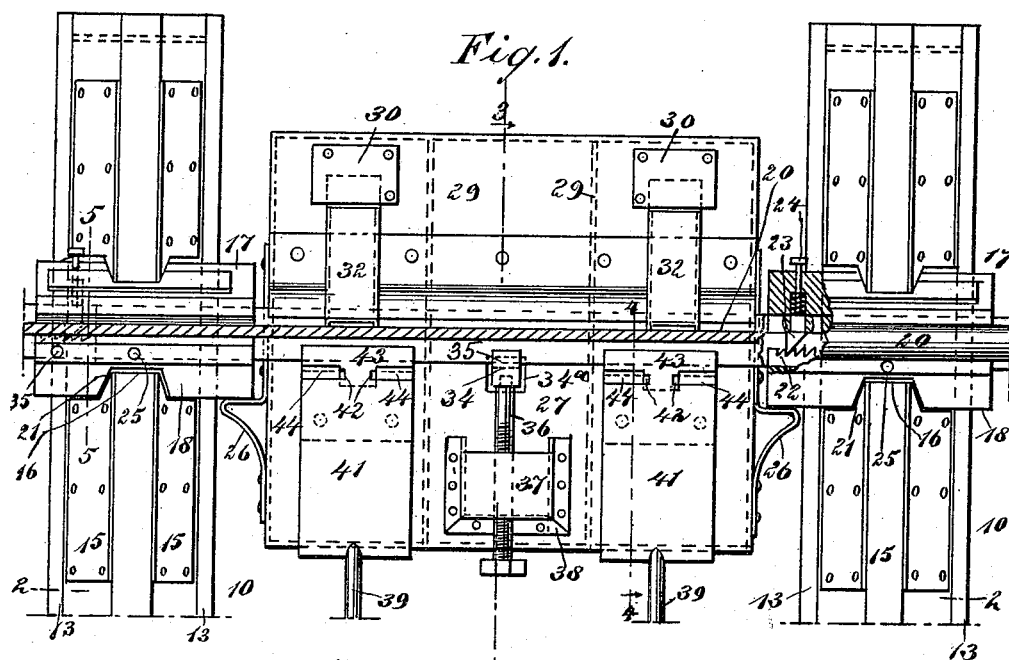


E. L. ARNOLD.
CONSTRUCTION OF RAILROADS.

Patented Mar. 7, 1893.



WITNESSES:

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UNITED STATES PATENT OFFICE.

ELIPHALET L. ARNOLD, OF GEORGETOWN, TEXAS.

CONSTRUCTION OF RAILROADS.

SPECIFICATION forming part of Letters Patent No. 493,052, dated March 7, 1893.

Application filed July 11, 1892. Serial No. 439,571. (No model.)

To all whom it may concern:

Be it known that I, ELIPHALET L. ARNOLD, of Georgetown, in the county of Williamson and State of Texas, have invented new and useful Improvements in the Construction of Railroads, of which the following is a full, clear, and exact description.

My invention relates to improvements in railroad construction, and the object of my invention is to provide means for constructing an all metallic railroad which will not be very expensive, will be so strong that an accident is practically impossible, and which may be very rapidly laid.

To this end, my invention consists in certain features of construction and combinations of parts, which will be hereinafter described and claimed.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar figures of reference indicate corresponding parts in all the views.

Figure 1 is a broken sectional plan of one of the track rails and the supporting ties, and a connecting bridge. Fig. 2 is a longitudinal section on the line 2—2 in Fig. 1, showing the ties in cross section. Fig. 3 is a cross section through the bridge, on the line 3—3 in Fig. 1. Fig. 4 is a detail section on the line 4—4 in Fig. 1; and Fig. 5 is a detail section on the line 5—5 in Fig. 1.

The track is provided with cross ties 10, which are arranged in substantially the usual way, these ties being of an essentially triangular cross section, and each tie has a horizontal cross brace 11 near the top, which also serves as a floor for the rail supporting chairs, and a closed bottom 12, adapted to rest upon the ground. The tie has also side and end flanges 13 and 14, which extend outward and downward, and by being embedded in the soil, hold the tie firmly in place.

The tie 10, is hollow so as to be filled with any suitable ballasting material, and it is preferably strengthened on the sides by reinforcing plates 15. At a point vertically beneath the rails, the tie is provided with a dove-tailed recess 16, adapted to receive the rail-supporting chairs or wedges 17 and 18, which are held horizontally in the recesses 16, and these chairs are provided on their inner sides

with grooves 19, which receive and support the flange of the rails 20.

The chair or wedge 18 is recessed on its back side, as shown at 21, so as to receive the adjacent portion of the tie, as shown in Fig. 1, and prevent the chair from being displaced. This chair 18, has on its inner side and near one end, a series of ratchet teeth 22, which are adapted to engage the pawl 23, which is produced on the inner end of a sliding spring-pressed bolt 24, which extends through the chair 17. The chair 17 is made wedge-shaped, and when driven to place in the recess 16 of the tie, the pawl 23 will advance step by step over the teeth 22, and the two chairs will thus be held together and clamped firmly to the rail. The chair 18 is perforated, as shown at 25, so that spikes may be driven down through it and through corresponding perforations in the rail flange, and this arrangement prevents the creeping of the rail.

The chairs 18, rest at one end and on their back sides against brackets 26, which are produced on the sides of bridges 27, and these bridges are arranged between the ties and beneath the rails, there being a bridge between every two ties and at each end thereof. The bridge 27 is of an essentially rectangular shape and is hollow, and the bridge is also slightly wedge-shaped, its bottom being inclined upward and inward, as shown at 28 in Fig. 3, so that it may be easily pushed to place beneath a rail and between the ties after the rail and ties have been laid. The bridge has depending partitions or ribs 29, which give it increased strength, and which also, by contact with the roadbed, assist in preventing its shifting.

On the top of the tie 10, near its outer edge, are socketed plates 30, beneath which are inserted the turned up ends 31 of braces 32, the inner ends of which fit snugly against the web of the rail just beneath the tread, and prevent the rail from being broken over. The rail flange is held in place by clips 33, which are secured to the top of the bridge and on the outer side of the rail, and the inner side of the flange is held in place by a block 34, which is held in a recess 34^a in the top of the bridge 27, and which has a groove 35 to fit the rail flange, as shown in Figs. 1 and 3.

This block 34 is secured to a screw-bolt 36, which is held to turn in a nut 37 on the top of the bridge, the nut being fastened into a socket 38, and by turning the screw it may be moved out or in so as to properly adjust the block 34.

The bridges on opposite sides of the track are connected by cross rods 39, which in the center are screw-threaded and provided with a turn-buckle 40 (see Fig. 4), by adjusting which, the length of the rods may be adjusted so as to hold the bridges in proper position in relation to each other. The outer ends of the rods 39 terminate in plates 41, which near their outer ends are slotted on opposite side edges, as shown at 42 in Fig. 1, and a head 43 is thus formed which is adapted to lie upon the flange of the rail so as to assist in holding it in place, and which is also adapted to engage the ears or lugs 44, which are secured to the top of the bridge and project upward through the slots 42 of the plates 41. It will be seen that this arrangement provides an easy means of connecting opposite bridges, and the tie rods 39 are arranged near opposite ends of the bridges so that the two connected bridges will be absolutely rigid and cannot be shifted in relation to each other.

It will be seen from the above description, that the track rails are held firmly on both sides throughout their entire length, so that if a rail should break at any point it would still be held in place, and a train would pass safely over it; moreover, there is no chance for the rail joints to settle, and consequently a perfectly smooth road may be constructed.

In laying the rails, the cross ties are laid in the usual way, the chairs 17 and 18 adjusted upon the rails and within the recesses 16 of the ties; the wedge-shaped chairs 17 are then driven home, thus fastening the rail in place, and after this the bridges are pushed beneath the rails and between the ties, and the opposite bridges connected by the tie rods in the manner described.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In the construction of railroads, the combination, with the railroad ties having dovetail recesses in the top, of chairs shaped to fit the recesses and having grooves to receive the rail flanges, a series of ratchet teeth produced on the inner edge of one chair, and a spring-

pressed pawl secured to the opposite chair 55 and adapted to engage the ratchet teeth, substantially as described.

2. The combination, with the cross ties having dovetail horizontal recesses in the top, of movable chairs held within the recesses, the chairs having grooves on their inner sides to receive the rail flanges and one of the chairs having a recess to fit over the adjacent portion of the tie, a series of teeth produced on the inner side of one chair, and a spring-pressed pawl secured to the opposite chair and held to engage the teeth, substantially as described.

3. The combination, with the cross ties and the rails thereon, of wedge-shaped bridges held beneath the opposite rails and between the ties, fastening devices to secure the rails to the bridges, and adjustable tie rods connecting opposite bridges, substantially as described.

4. The combination with the rail, of the bridge held beneath the same, braces secured to the outer portion of the bridge and held to fit beneath the tread of the rail, fastening clips secured to the outer portion of the bridge and shaped to fit the rail flanges, and an adjustable fastening claw held upon the bridge and adapted to fit upon the inner portion of the rail flanges, substantially as described.

5. The combination, of the opposite bridges having lugs or clips thereon to fit the inner portion of the rail flange and fastening devices to fit the outer portion of the rail flange, adjustable tie rods connecting the bridges, the rods terminating at their outer ends in plates having slots to receive the lugs of the bridges, and heads to fit upon the rail flanges, substantially as described.

6. In the construction of railroads, the combination of the cross ties having recesses in the top, the rail-supporting chairs held within the recesses and projecting horizontally therefrom, the bridges held between the ends of the ties and beneath the rails, fastening devices to secure the bridges to the rails, and brackets produced on the sides of the bridges and adapted to brace the rail chairs, substantially as described.

ELIPHALET L. ARNOLD.

Witnesses:

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