F. L. MONTGOMERY.

COMPOUND RAIL.

APPLICATION FILED MAY 16, 1918.

1,364,204.

Patented Jan. 4, 1921.

3 SHEETS—SHEET 1.

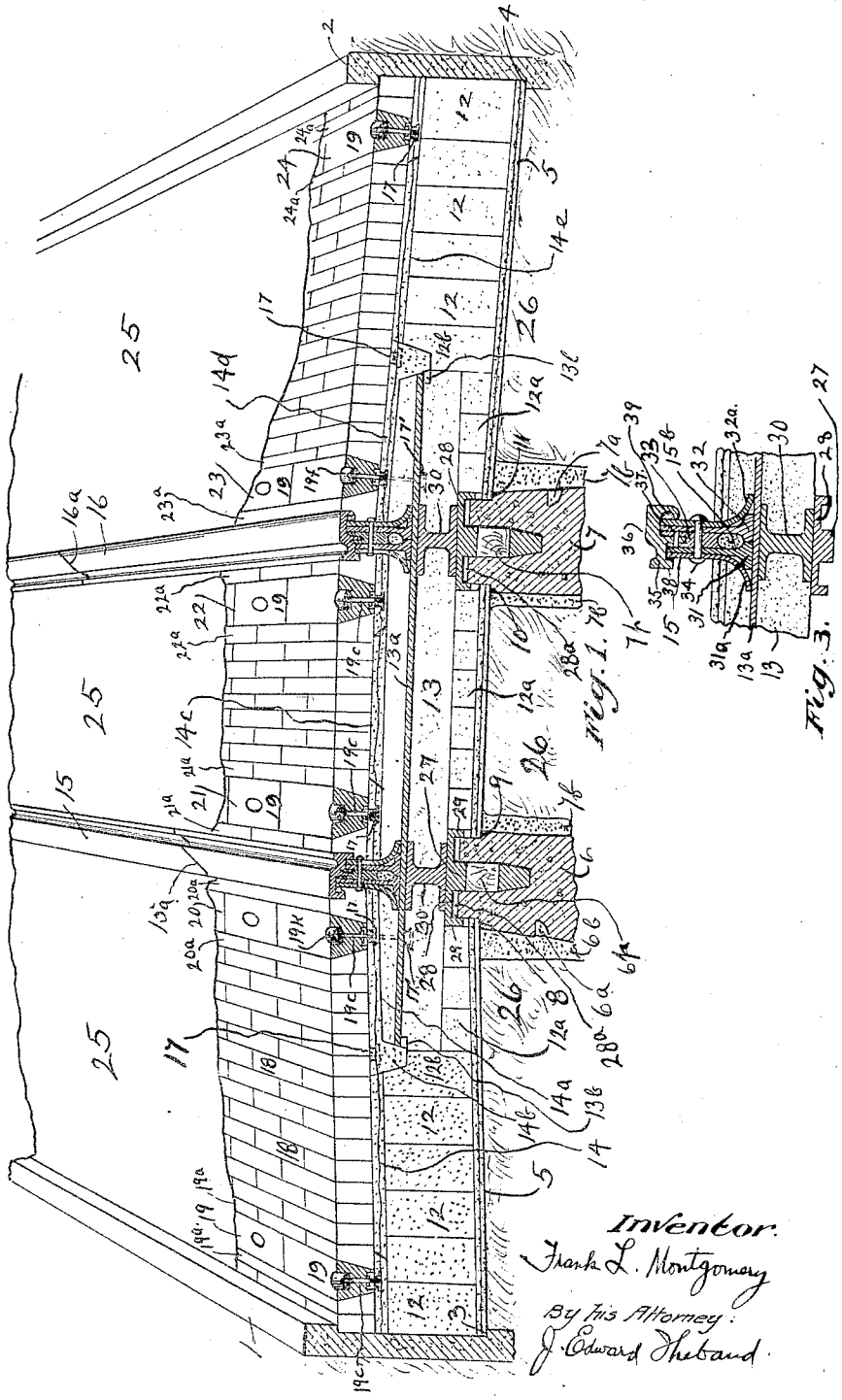


Fig. 3.

Fig. 1.

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3 SHEETS—SHEET 2.

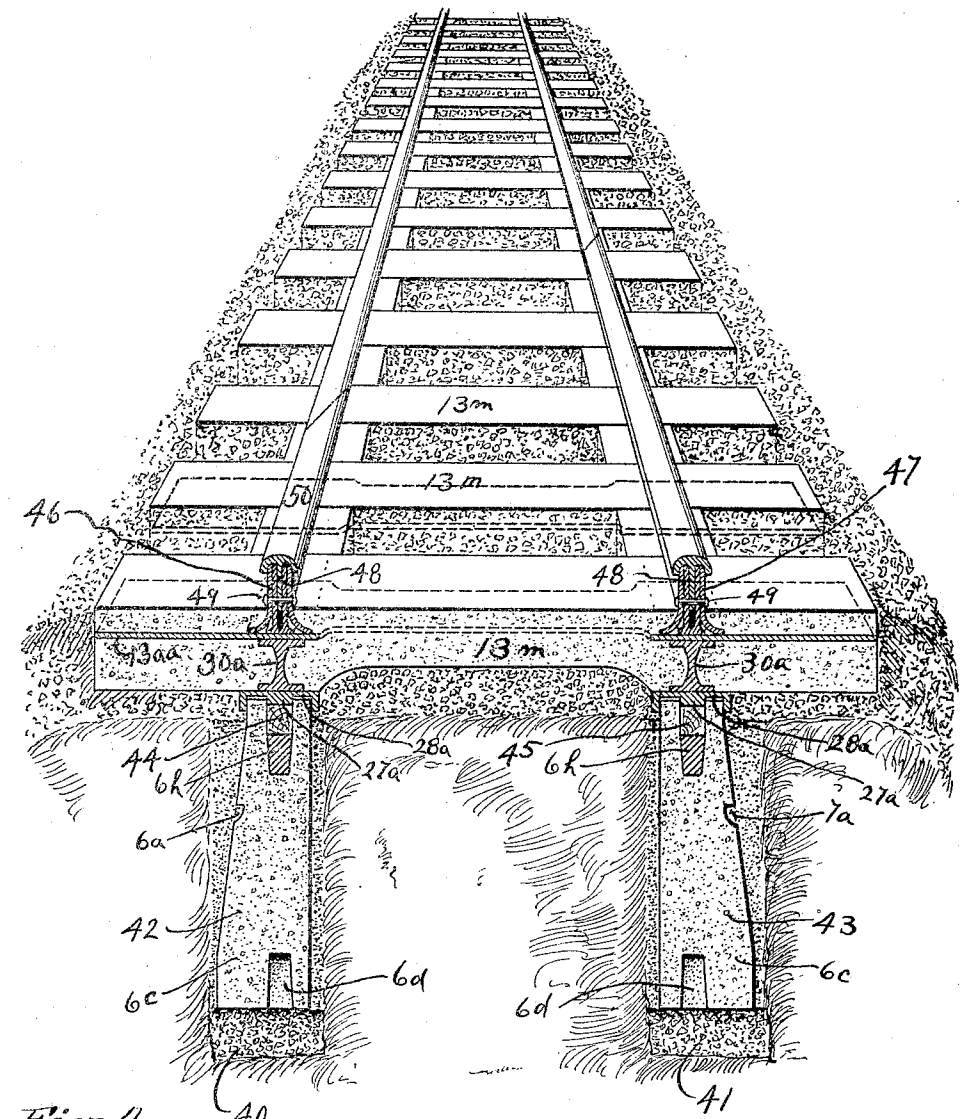


Fig. 4.

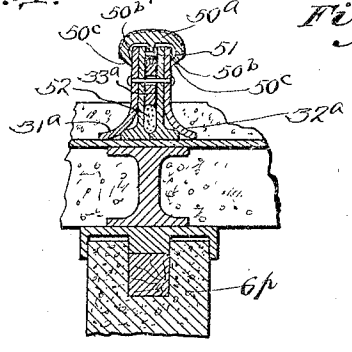


Fig. 2.

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3 SHEETS—SHEET 3.

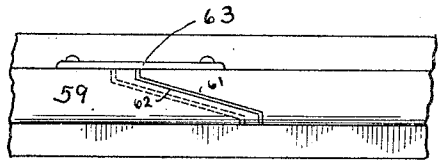


Fig. 6.



Fig. 9

Fig. 5

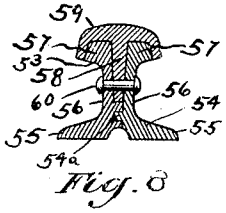


Fig. 8

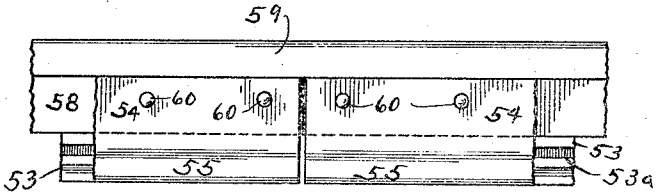


Fig. 7.

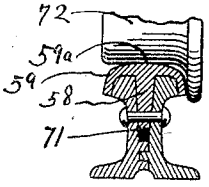


Fig. 11.

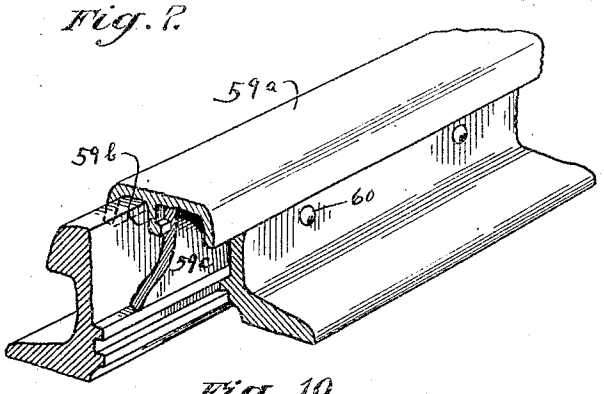


Fig. 10

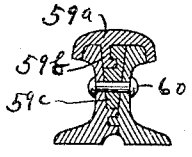


Fig. 12.

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UNITED STATES PATENT OFFICE.

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COMPOUND RAIL.

1,364,204. Specification of Letters Patent. Patented Jan. 4, 1921.

Application filed May 16, 1918. Serial No. 234,983.

To all whom it may concern:

Be it known that I, FRANK L. MONTGOMERY, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Compound Rails, of which the following is a specification, reference being had to the accompanying drawings, and to figures of reference marked thereon, which form part of this specification.

Like figures of reference refer to like parts.

This invention relates to compound rails.

To provide for the continuous bonding of the individual rail lengths for electrical transmission.

To provide such rail as will reduce accidents to the minimum, due to faulty rail construction.

To provide a track which can be built in parts in a factory and easily assembled for use on the ground.

To provide a separable construction which shall be keyed together in a manner that any part thereof can be taken up without destroying the same, so that inspection of the substructure can be made, or so that water, gas and sewer pipes can be reached easily by disassembling the pavement and substructure.

With these and other objects, my invention resides in certain construction illustrated in the drawings and hereinafter described.

In the drawings:—

Figure 1 is a sectional perspective view of a roadway having a pavement and substructure including a track construction embodying my invention.

Fig. 2 is a sectional perspective view of a railway track and road-bed construction, and is a modification of the form shown in Fig. 1.

Fig. 3 is an enlarged view of the rail and tie construction shown in Fig. 1.

Fig. 4 is a sectional enlarged view of a combined track, tie and substructure embodying one form of my invention.

Fig. 5 is another form of rail construction embodying features of my invention.

Fig. 6 is a plan of the joint in the rail construction shown in Fig. 5.

Fig. 7 shows a rail-joint of such rails as are shown in Figs. 5 and 6, illustrating how I eliminate the usual fishplate.

Fig. 8 is a sectional elevation of the compound rail shown in Fig. 5.

Fig. 9 is a section showing the over-lapping of a joint in the bearing part of the rail shown in Figs. 5 and 6.

Fig. 10 is a perspective view of a modified form of rail construction to that shown in Fig. 5.

Fig. 11 is a modified form of the rail section shown in Fig. 8 and includes a cushioning element to relieve the rail of its shock.

Fig. 12 is a sectional view showing the positioning of the parts and their form of the rail shown in Fig. 10.

Referring now to Fig. 3 for an enlarged section of the compound rail shown in Fig. 1, the concrete tie 13 which includes the reinforcing plate 13^a, resting upon the I-beam 30, to which the tie plate 13^a is fixed either by electrical spot welding or rivets, and also fixed by spot welding or rivets is the compound rail 15, made up of the following parts: two upright T-stringers 31 and 32. Adjoining the T-stringer 31 is shown a curved stringer plate 32^a. The heads of the stringer plates 31 and 32, resting upon the tie plate 13^a, are in contact and form a space therebetween, the lower part of which is filled with some resilient material including oil or other fluid substance, or suitable resilient metal, springs, etc., marked 15^b. Above this resilient material is a stringer plate 33 having a hole loosely engaging a rivet 34. The upper end of this plate 33 is slotted and is occupied by the longitudinal tongue 35 of the rail top 36, and is held within the slot of the plate 33 by means of the pin 37. The sides of the rail top 36 are bent down and in to contact the respective stringer plates 31^a and 32^a, with which are formed longitudinal recesses 38 and 39 which are occupied, in the case of a rail on electric railway with electrical bonding pieces.

In the railway track and bed construction shown in Fig. 2, the tie and compound rail construction is like that shown and above described in connection with Figs. 1 and 3, but the wearing part of the rail in this figure is shown adapted to inter-urban and steam lines, carrying freight and passengers.

The rail construction in the compound rails 46 and 47 is similar to that shown in Figs. 1 and 3, the parts being similarly numbered. The upper wearing element has a tongue 48 reaching down into the central

part of the rail and is engaged by a series of rivets 49. The upper wearing part 50 of the rail 46 is integral with the tongue 48. The enlarged rail section shown in Fig. 8 is similar to that shown in Fig. 2, with the exception that the tongue is separate from the head of the rail, the two being united by a pin 51 in a manner similar to the fixing of the parts by the pin 37 of Fig. 3. The outer surface of the head 50^a shown in Fig. 8 is made of more durable material than the rest of the metal in the head. I have shown the stringer plate 33^a longitudinally corrugated on each side to facilitate its freedom of movement when being removed and replaced, and also for freedom of action in connection with the resilient substance 52. It will be noticed that there are spaces 50^b, 50^b between the head 50^a and the side plates 31^a and 32^a, having the lower edges of the head 50^a inturned at 50^c and 50^c.

Referring now to the rail construction illustrated in Figs. 5, 6, 7, 8 and 9, considering first the compound rail shown in Figs. 5, 6, 7 and 8, the body of the rail is shown composed of co-fitting members 53 and 54, each of which has a bottom flange 55 and a web 56 and head 57 integral therewith. The member 54 has a tongue 54^a fitting the groove 53^a in the member 53. A space is formed between the webs 56, 56 which is occupied by a tongue 58 of a T-member 59, fitting over the heads of the members 53 and 54. The member 59 is made of harder material than the members 53 and 54 for wearing purposes, and the three members are bound together by rivets 60. A joint is shown having inclined edges 61 and 62 which over-lap as shown in Fig. 9. An electrical bonding piece 63 binds the two parts of the member 59. In Fig. 7, I show how a joint between continuous rails is made by the member 59 to eliminate the fish-plate.

Referring now to Fig. 10, the member 59^a is shown to have a centrally depending tongue 59^b which is L-shaped and interlocked in a groove of the plate 59^c, 59^c. By this arrangement the part 59^a can be thrown away as scrap when worn and the part 59^c can be saved and interlocked with a new head-piece 59^b.

In Fig. 11 is shown a resilient material 71 below the central tongue 58. The member 59 is shown to have its upper surface crowned at 59^a contacting the tread of the wheel 72.

A cushioning effect is provided in the resilient substance at 15^b of the rail which supports the member 33, to which is affixed the head 36 of the rail. Electrical bonding is preferably placed at 39 for this type of rail.

The type of rail shown in Fig. 4 is similar to that shown in Figs. 1 and 3, except that the sides of the member 33^a are corrugated to afford an easier movement between the side plates. The head 50^a of the rail is formed for inter-urban traffic and is provided with a hardened wearing surface, whereas the heads of the rails 15 and 16 are for urban traffic.

Considering the rail formations shown in Figs. 5 to 12 inclusive, the compound rail shown in Figs. 5, 6, 7 and 8 has its side members 53 and 54 interlocked at the tongue and groove 54^a and 53^a so as to bring the heads 57 at the same height. These heads are made strong to fulfil the office of the common rail head and to act as a support to the T-member 59. The joints of the three members of this compound rail may be staggered, both as regards the joint between the members 53 and 54, and between the T-member 59 and any one of the members 53 and 54, thus eliminating fish plates and making a stronger and more continuous rail. The joints between the T-members 59, I prefer to make diagonal for eliminating the jolt, common with square cut joints. When replacing a worn T-member 59 with a new one, the rivets 60 are removed and replaced when the new member is in place. In order to provide for a slip-contact joint for contraction and expansion of rails, and to hold the electrical contact between contiguous rails, the lip 61 overlaps the lip 62. Additional bonding is provided in the band 63. By staggering all joints, as between any two members, electrical continuity in circuit is preserved.

Where a cushioning effect in this type of interurban rail is desired, I provide a cushioning substance at 71 as shown in Fig. 11.

In order to further provide for economy over the rail construction shown in Figs. 5 to 8, I make the T-member of two parts as shown in Fig. 10, 59^a and 59^c interlocked by the tongue 59^b, which admits of retaining the depending central member of the T-member and interlocking it with a new head 59^a.

The various embodiments of my invention illustrated and above described fulfil the requirements of a substantial urban and inter-urban track rail having a permanent foundation beneath the rails and cross-ties of reinforced concrete, at the same time economizing in the up-keep of the rail.

Having described my invention, I claim:

1. In a railway track construction, longitudinal walls forming a foundation, cross-ties laid, side walls and compound rails on said ties, each rail comprising two co-fitting rail members, each member having a base, a web portion and a head, said members being interlocked centrally at the base thereof, by means of tongue and groove elements, running longitudinally of the rail members, said members being spaced above the base thereof, and a T-piece fitting into

said space between the heads of said members and extending over said heads, to take the wear from the wheels which roll upon the said rails, and means holding said members with said T-piece together.

2. In a railway track construction, including ties and rails laid thereon, compound rails on said ties, each rail comprising two co-fitting rail members, each member having a base, a web portion and a head, said members being interlocked centrally at the base thereof, by means of tongue and groove elements, running longitudinally of the rail members, said members being spaced above the base thereof, a T-piece fitting into said space between the heads of said members and extending over said heads, to take the wear from the wheels which roll upon said rails, and means holding said rail members and said T-piece together.

3. A compound rail, comprising two co-fitting rail members, each having a base, a web portion and a head, said members being interlocked centrally of the base, by means of tongue and groove interlocking elements running longitudinally of said rail members, said members being spaced above the base thereof, a T-piece fitting into said space and covering the heads of said members, and a resilient element running longitudinally of said rail, positioned in the lower part of the space between the said members and supporting the said T-piece, to receive the shock of passing loads, and means for holding the rail members together.

4. A compound rail, comprising two co-fitting rail memers, each having a base, a web portion and a head, said members being interlocked centrally of the base, by means of tongue and groove interlocking elements running longitudinally of the rail members, said members being spaced above the base thereof, a T-piece fitting into said space and covering the heads of said rail members, said T-piece being of two parts; one being a horizontally disposed piece, covering the heads of said rail members and the other being a centrally located depending part interlocked with the horizontal piece fitted in between the heads of the said members.

5. A compound rail comprising two co-fitting rail members, each having a base, a web portion and a head, said members being interlocked centrally of the base, by means of tongue and groove interlocking elements running longitudinally of the rail members, said members being spaced above the base thereof, a longitudinally resilient means positioned in the bottom of said space, a plate part, running longitudinally of the rail and positioned above said means in said space and supported by said means, and a wearing strip positioned above said head and interlocking with said plate part, said strip and said plate part together forming a T-piece.

6. A compound rail, comprising two spaced and inverted T-plates, two bent plates including the T-plates between them and a T-piece having a centrally depending member between said T-plates, said T-piece forming the head of the rail and means for holding the parts of said compound rail together.

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