

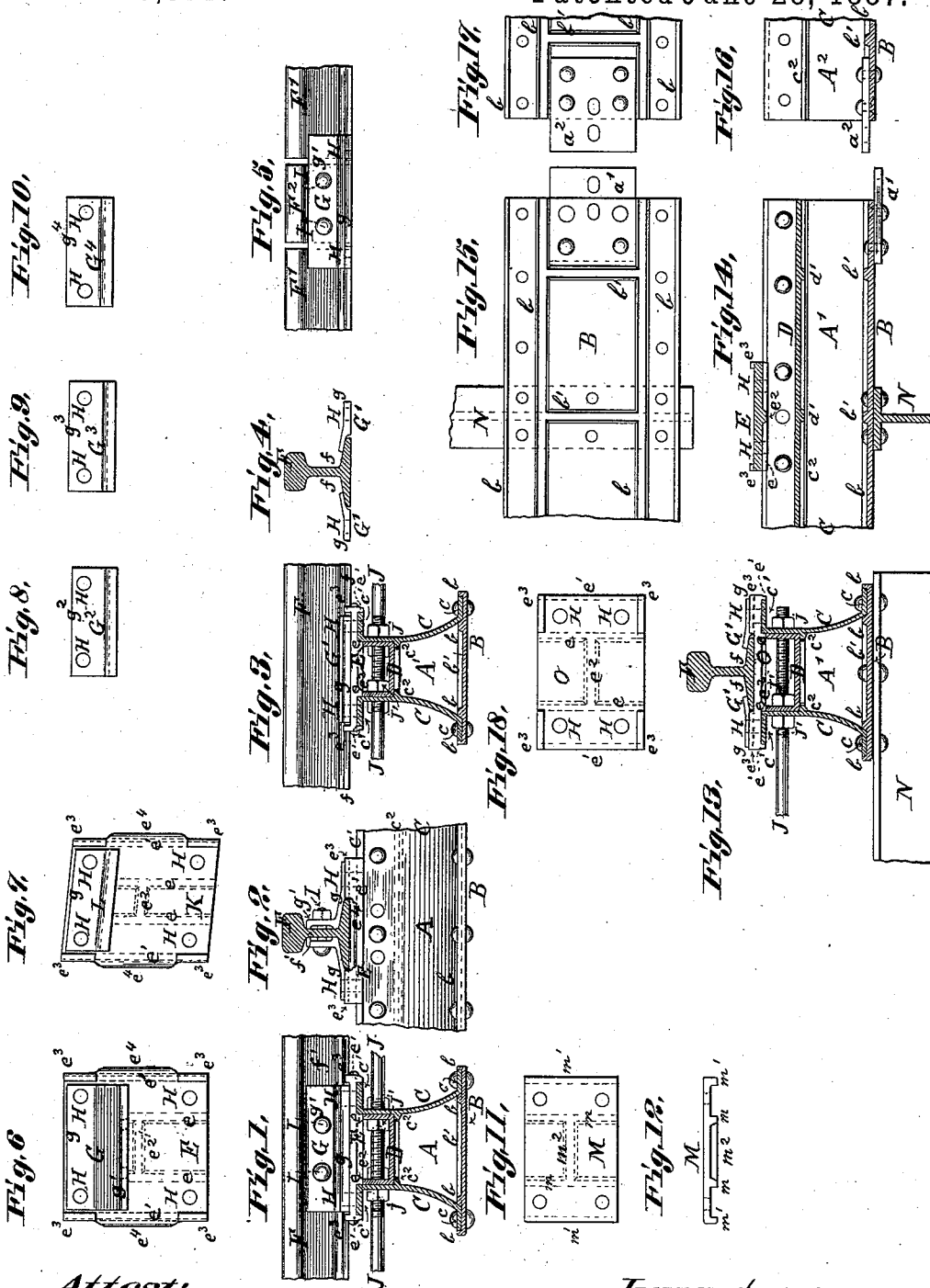
(No Model.)

F. X. GEORGET.

RAILWAY BEDDING.

No. 365,511.

Patented June 28, 1887.



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RAILWAY-BEDDING.

SPECIFICATION forming part of Letters Patent No. 365,511, dated June 28, 1887.

Application filed March 10, 1886. Serial No. 194,751. (No model.)

To all whom it may concern:

Be it known that I, FRANÇOIS XAVIER GEORGET, of St. Louis, Missouri, have made a new and useful Improvement in Railway-Beddings, of which the following is a full, clear, and exact description.

The improvement in question, when fully carried out, is an all-metallic bedding. A portion of it, however, can be used in connection with the ordinary wooden cross ties.

The features of the improvement are mainly the construction of the ties, bracing and tying the ties together to distribute the strain upon the bedding and to hold the ties more effectually from displacement, the mode of connecting the rails with the bedding, the means for varying the gage, the construction of the rail-joints, and minor features of the improvement, as hereinafter designated and claimed.

The annexed drawings, making part of this specification, exhibit the most desirable mode of carrying out the improvement.

Figure 1 is a transverse section of one of the broader ties, such as are used at the middle of the rail and at the rail-joints. The rail is shown in side elevation in position, as well as all the parts for fastening the rail at its center to the tie, saving the bolts which secure the fish-bar, shoe, and tie together. In this view can be seen the strengthening ribs or flanges of the tie and shoe. Fig. 2 is a view at right angles to that of Fig. 1. Fig. 3 is a view similar to that of Fig. 1, but showing a narrower tie, such as is used between the middle and the end of the rail, and a modified form of fish-plate, which bears upon the foot only of the rail, leaving the rail free to expand and contract longitudinally. Fig. 4 is a view at right angles to that of Fig. 3, showing only the rail and fish-bars. Fig. 5 is a side elevation of one of the rail-joints. Fig. 6 is a plan showing one of the larger shoes used upon the broader ties. The view includes one of the fish-bars. The broken lines indicate the strengthening-ribs upon the under side of the shoe. Fig. 7 is an analogous view, being a plan of a special form of shoe and fish-bar, such as used at crossings. Fig. 8 is a plan of an intermediate (used between the middle and ends of the rail) fish-bar. The holes for receiving the bolts that secure the fish-bar to the substruct-

ure are punched near the outer edge of the plate. Fig. 9 is a view similar to that of Fig. 8, but showing the holes punched farther in from the outer edge of the bar. Fig. 10 is another view of the fish-bar, showing the holes punched still farther in from its outer edge. Fig. 11 is a plan of a stiffening-plate used at the top of the tie between the rails. Fig. 12 is an end elevation of the plate shown in Fig. 11. Fig. 13 is a cross section of a tie, as when used longitudinally in the track. The view shows the T-beam which unites the ties upon opposite sides of the track, and also, by penetrating the ground, prevents the displacement of the ties in the direction of the line of railway. The rods used to tie and brace the opposite ties together are also shown, as well as the shoe, fish-bars, and rail. Fig. 14 is a central longitudinal section of an end of one of the longitudinal ties. The view shows also a shoe upon and a beam beneath the tie, as well as the plate at the end of the tie for interlocking it with the opposing or next tie. Fig. 15 is a plan of the bottom plate of a longitudinal tie. The cross-beam is shown. Fig. 16 is a view analogous to that of Fig. 14, it being a vertical longitudinal section of the opposite end of the longitudinal tie to that shown in Fig. 14. The channel-bar exhibited in Fig. 14 does not appear in this figure, and the interlocking plate is attached to the upper side of the bottom plate of the tie. Fig. 17 is a plan of the bottom plate of the tie end shown in Fig. 16. Fig. 18 is a plan of a shoe used upon a longitudinal tie at points between the middle and the ends of the rail.

The same letters of reference denote the same parts.

The cross-tie A, Figs. 1, 2, is composite, consisting of the bottom plate, B, the two similar side plates, C C, and the channel-bar D. The bottom plate, upon its upper surface, has the two longitudinal ribs *b b*, located, respectively, toward the opposite edges of the plate, and at intervals along its length there are cross-ribs *b'*, Figs. 1, 14, 15. The side plates are provided with the outwardly-turned flanges *c* and *c'*, respectively, at the bottom and top of the plate, and upon the opposite or inner side of the plate, and between its upper and lower edges, is a horizontal rib, *c''*.

The various parts of the tie are assembled and fastened together as shown, the bottom flange, *c*, of the side piece resting upon and riveted to the bottom plate upon the outer side and against the ribs *b*, and the channel-bar D fitting between the side plates, CC, and resting upon the ribs *c*² *c*², and being riveted to the side plates, and thus serving to brace and tie the side plates at or near both the bottom and the top of the tie. The upper edges of the channel-bar come a little below the level of the flanges *c*¹ *c*¹, which project horizontally from the upright portion of the side plates. The tie may be modified in this respect: the channel-bar and side plates, CC, may be rolled in one piece. The shoe E is fitted to and adapted to rest upon and be secured to the side plates, CC, and in turn it is adapted to receive and support the rail F, as well as the fish-bars G, which serve partly to confine the rail laterally in place, but also to fasten the rail downward to its bedding, and especially, in connection with the substructure or bedding, to fasten the rail longitudinally at its middle. With these purposes in view, the shoe on its under side is provided with the cross-ribs or flanges *e* *e* and *e*¹ *e*¹, which are spaced apart to come as follows: the ribs *e* *e* just within, and respectively against the side plates, CC, and just above the upper edges, respectively, of the channel-bar, and the ribs *e*¹ *e*¹ without, and respectively against the outer edges of the flanges *c*¹ *c*¹ of the side plates. A strengthening-rib, *e*², Figs. 1, 6, may also be used at the center of the shoe underneath. The ribs *e* *e* serve to strengthen the shoe, and also as shoulders to prevent its displacement. Upon its upper side the shoe has the four upwardly-projecting lips, *e*³, at its four corners, respectively, which serve as shoulders to confine the fish-bars G in an endwise direction. The horizontal projection *e*⁴, at the center of the shoe at each end, is originally formed upright upon the shoe, in connection with the adjoining lips *e*³, but is subsequently rolled down into the position shown, to admit the rail to rest upon the main portion of the shoe. The fish-bars G G at each side of the rail are secured by means of the bolts H, which pass downward through the horizontal portion *g* of the fish-bar, and fasten the fish-bar, shoe, and side plates of the tie together. The portion *g* extends over the rail-foot *f*, and the upright portion *g*¹ of the fish-bar is fastened by means of the bolts I to the rail F, at the middle, *f*¹, thereof. The rail is thus secured vertically to the substructure, and in addition thereto is secured longitudinally at a point between its ends. This point is in practice midway in the length of the rail; and each way therefrom to its ends the rail, although confined laterally and vertically, is free to expand and contract upon its bedding. The rail, however, as an entirety, cannot move from its place in which it was originally fastened. At various points between the middle of the rail and its ends a

tie, A', Fig. 3, in every way, saving that it is narrower, similar to the tie A, is used. This special size may, for convenience, be termed the "intermediate tie." The form of fish-bar, G', preferably used in connection with the intermediate ties is shown in Figs. 3, 4, it being similar to the horizontal portion *g* of the fish-bar G, and, while lapping at its inner edge upon the rail-foot, it is fastened to the bedding only, and not to the rail. At the joints in the line of rail the wider form of tie A is used. One of the rail-joints is shown in Fig. 5. The form of the joint, taken in connection with the fastening of the rail longitudinally at its center, is a material feature of this improvement.

F' F', Fig. 5, represent opposing rail ends in the line of rail. Instead of placing the rail ends immediately together, as is customary in lines of rail as hitherto constructed, a short piece, F², of rail is placed between them. This short piece, by means of fish-bars G, similar to those shown in Figs. 1, 2, and the bolts H, is fastened vertically and longitudinally to the bedding. The fish-bars are longer than the rail-piece F², and at both ends lap upon and against the rail ends F'. All three parts—the rail ends F' F' and the rail-piece F²—as well as the fish-bars G, rest upon the tie, and the rail ends F' F' are free to move longitudinally.

The rail piece F² in practice is made slightly thicker than the rail ends F' F', to facilitate the longitudinal working of the rail ends. The advantage derived from this feature of the improvement—namely, the combination of the rails F, fastened at the center to the substructure, with the short interposed rail-piece F²—is that the openings at the end of the rails, by reason of the contraction of the metal, are reduced one-half, for the rails F, because of their being fixed at their centers, respectively, each contract from both ends to the center; hence the contraction in each rail is distributed half along one and half along the other of its ends. The rail ends F' F', however, do not open apart directly from each other, but from the short rail-piece F², which, being so comparatively short, does not materially contract at either end away from the opposing rail end F', and hence the opening due to the contraction of the two rail ends F' F' is divided into the two openings at the ends, respectively, of the rail-piece F².

A further material feature of the improved construction should be considered in connection with the rails F, fastened longitudinally at the middle—viz., the tying and bracing of the ties in the direction of the line of railway, and thereby very effectually anchoring the bedding generally, and especially along the curves of the railway. This in turn anchors the several rails longitudinally more effectually than when the ties are not connected. The preferable mode of connecting the ties together is by means of the rods J, which extend

from tie to tie along the line, but more particularly at the curves of the road. The rod extends from a tie to the next one in the track. A second rod extends from the second tie to the third one, and so on. The rods extend through the ties, and by means of the nuts $j j'$, respectively upon opposite sides of the ties, the rods and ties cannot move upon each other in either direction. The rods at their ends thus lap at each tie. A pair of the rods are used at each side of the track. If desired, the rods J can be extended and arranged to lap upon each other through two, three, or more ties, according to the fatigue imposed upon the particular section of the bedding in question. This tying and bracing of the ties is of value, irrespective of the employment of the rail-piece, and of especial value in combination with that feature.

K represents an oblique shoe, and L an oblique fish-bar, adapted to be used at crossings and places where the rails cross the ties obliquely.

$G^2 G^3 G^4$, Figs. 8, 9, 10, respectively represent fish-bars which have the bolt-holes variously punched therein—those g^2 of the bar G^2 being nearest the outer edge, those g^3 of the bar G^3 farther in from the outer edge, and those g^4 of the bar G^4 still farther in. By means of these bars punched variously as described the gage of the road can be varied as follows:

By placing at right side of track—

Outside of rail.

Inside of rail.

Bar G^2

Bar G^4

" G^2

" G^4

" G^3

" G^3

" G^3

" G^3

" G^4

" G^2

By placing at left side of track—

Inside of rail.

Outside of rail.

Bar G^4

Bar G^2

" G^3

" G^3

" G^3

" G^3

" G^2

" G^4

" G^2

" G^4

M , Figs. 11, 12, represents a stiffening-plate used to strengthen the tie at its top midway between the rails. It is adapted to rest upon and to be riveted to the flanges $e' e'$ of the side pieces, C , the plate having on its under side at each end flanges $m m$, which come, respectively, against the outer and inner corners of the flange e' , and at its center being further strengthened by the rib m^2 .

As thus far described the ties have been treated as cross-ties; but ties constructed upon the same principle can be used longitudinally in the track, in which case the rail and fish-bars rest longitudinally upon the shoe and tie, and the rods J extend across the track and connect the opposite ties.

The tie in Figs. 13, 14, 15 shows a beam, N , preferably T-shaped in cross-section, which is riveted to the under side of the tie, and extending crosswise in the bedding, and connect-

ing similarly with the opposite tie upon the opposite side of the track. The beam is embedded in the ground and serves to anchor the bedding more securely.

In Figs. 14, 15, 16, 17 is exhibited a mode of connecting the longitudinal ties at their ends. The tie A' has a projecting plate, a' , Figs. 14, 15, attached to the under side of the bottom plate, B , and projecting endwise therefrom. The opposing tie, A^2 , has a plate, a^2 , attached to the upper side of the bottom plate, B , and projecting endwise therefrom. When the ties $A' A^2$ are placed endwise together, the plates lap vertically upon each other, and they are bolted together, thus tying the longitudinal ties into a continuous tie. The bolt-holes in the plates $a^2 a^3$ are elongated, to provide for the contraction and expansion of the metal. The shoe O , Fig. 18, is for the longitudinal ties.

It will be noticed that all the parts, saving the bolts and rivets, of the above-described bedding are so formed as to be susceptible of being rolled into the described shapes, by reason of which the cost of the construction is greatly reduced.

Another feature is noteworthy. Each part fits into its adjoining part, thus simplifying and facilitating the assembling of the parts and mutually strengthening them in their respective positions.

I claim—

1. A railway-tie whose side plates are both braced apart and tied together laterally at the bottom of the tie, and also at a point between the bottom and top of the tie, substantially as described.

2. A railway-tie whose side plates are both braced apart and tied together laterally at the bottom of the tie, at the top of the tie, and at a point between the bottom and top of the tie, substantially as described.

3. The combination of the bottom plate, B , the side plates, $C C$, and the channel-bar D , substantially as described.

4. The combination, in a railway-tie, of the bottom plate, B , having the bracing-ribs $b b$, and the side plates, $C C$, having the flanges $c c$, substantially as described.

5. The combination, in a railway-tie, of the side plates, $C C$, having, respectively, the ribs c^2 , with the channel-bar D , substantially as described.

6. The combination of a railway-tie having side plates, $C C$, provided, respectively, with the flanges $e' e'$, with the shoe E , having the ribs $e e e' e'$, substantially as described.

7. The shoe E , having the ribs $e e e' e'$ and the lips $e^3 e^3$, substantially as and for the purposes described.

8. The combination of the shoe E , having the lips $e^3 e^3$, and the fish-bars $G G$, as described.

9. The combination of the rail F , the fish-bars $G G$, the shoe E , and the tie A , substantially as described.

10. The combination of the rails $F F$ and the interposed rail-piece F^2 , said rails being

fixed longitudinally at the middle to the bedding, and being free to expand and contract from the middle to the ends, substantially as described.

- 5 11. The combination of the ties A A, connected by the rods J with the rails F, fastened at the middle, and the fixed rail-piece F², as described.

- 10 12. The combination, in a line of rail, of the fixed rail-piece F² and the rails F F, held longitudinally at the middle only, as described.

13. The oblique shoe K and fish-bar L, in combination with the rail F and bedding, as described.

14. The set of fish-bars G² G³ G⁴, having the 15 bolt-holes H punched variously therein, as described, as and for the purpose described.

15. The combination of the stiffening-plate M with the side plates of the tie A, as described.

Witness my hand this 8th day of March, 20 1886.

FRANÇOIS X. GEORGET.

Witnesses:

C. D. MOODY,
J. W. HOKK.