L. GEMMER.

RAILWAY.

APPLICATION FILED OCT. 10, 1908.

**916,295.**

Patented Mar. 23, 1909.

2 SHEETS--SHEET 1.

Fig. 1.

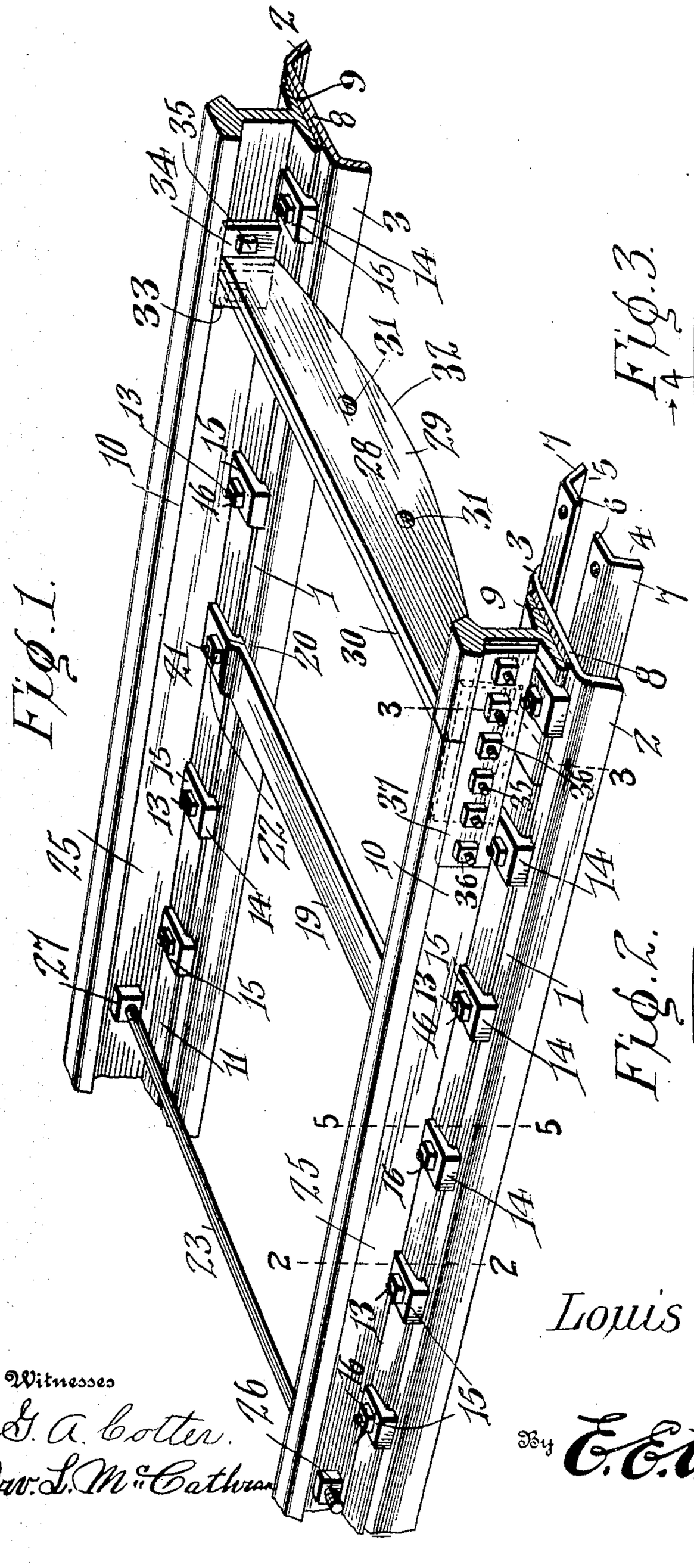


Fig. 3.

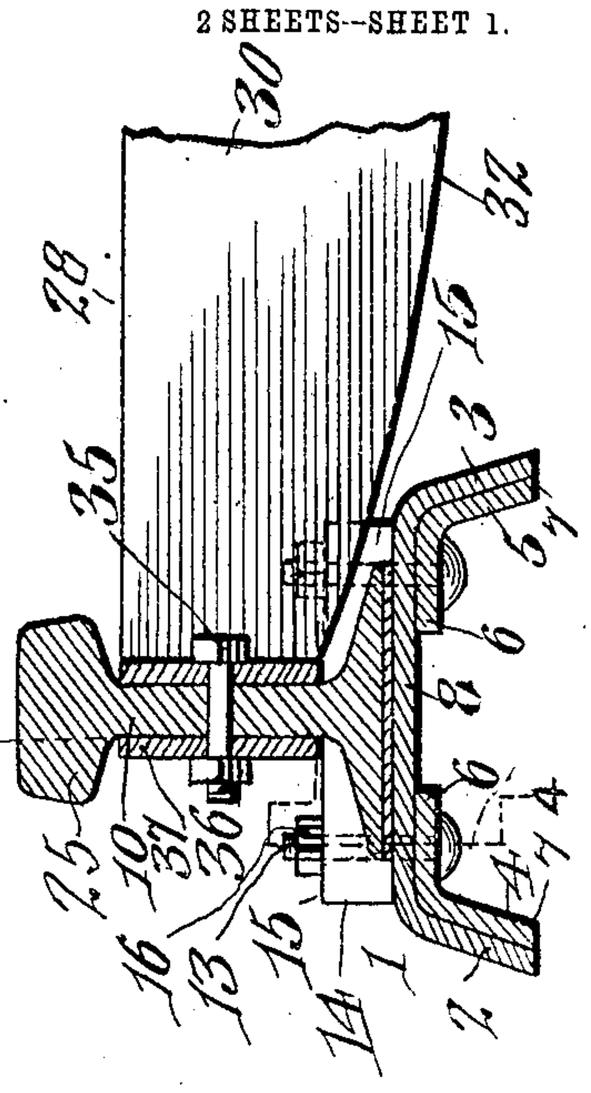
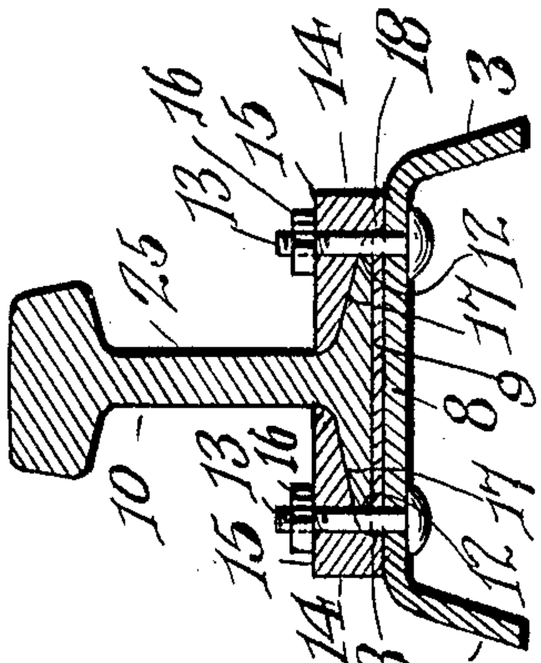


Fig. 2.



Witnesses

G. A. Cotter.

Jno. L. McCathran

Louis Gemmer, Inventor

By E. E. Wooman his Attorney.

L. GEMMER.

RAILWAY.

APPLICATION FILED OCT. 10, 1908.

**916,295.**

Patented Mar. 23, 1909.

2 SHEETS—SHEET 2.

Fig. 6.

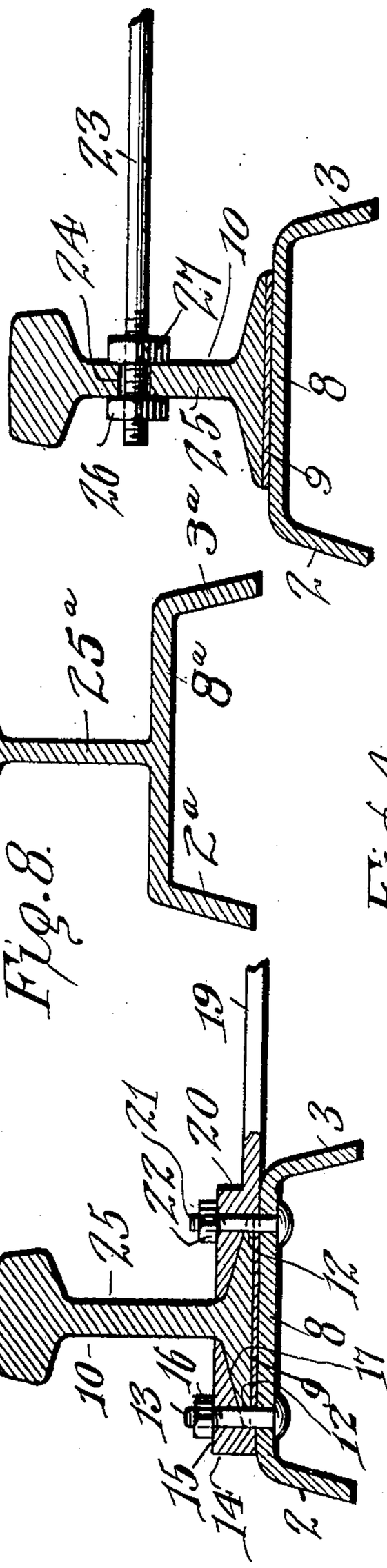



Fig. 8.

Fig. 4.

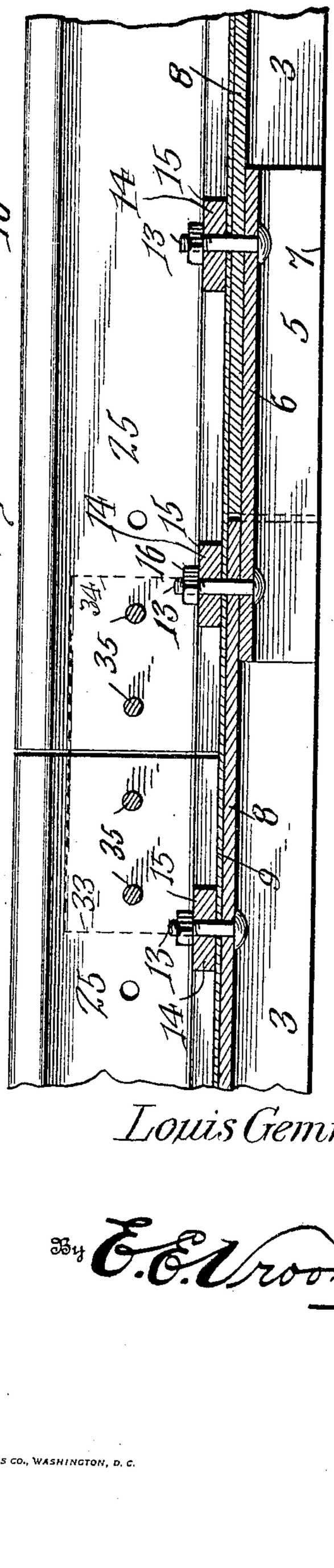



Fig. 5.

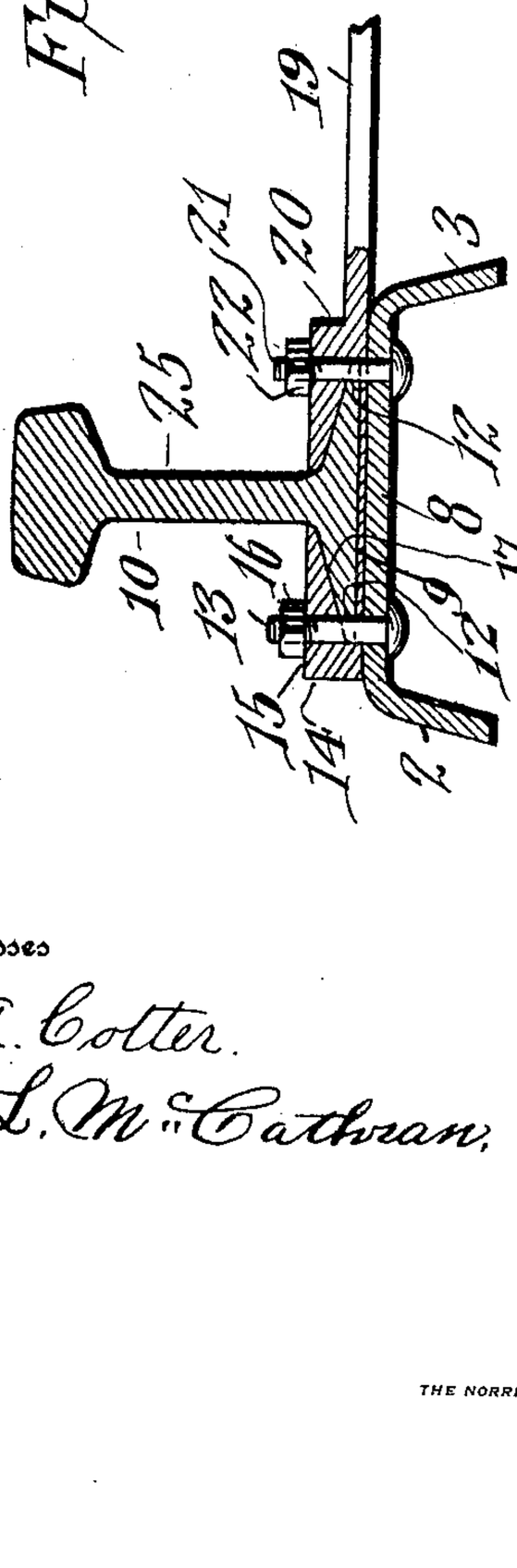
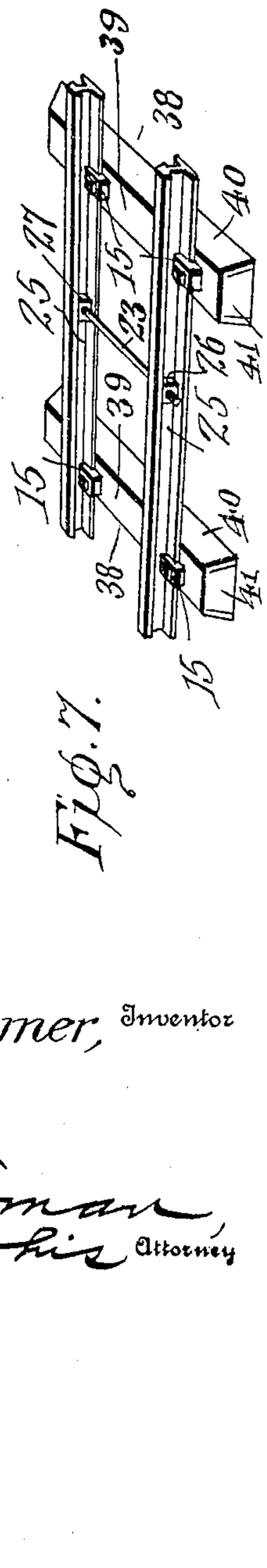



Fig. 7.




Louis Gemmer, Inventor

Witnesses

G. A. Cotter.

Irv. L. McCathran.

By E. E. Vrooman, his Attorney

# UNITED STATES PATENT OFFICE.

LOUIS GEMMER, OF AURORA, ILLINOIS.

## RAILWAY.

No. 916,295. Specification of Letters Patent. Patented March 23, 1909.

Application filed October 10, 1908. Serial No. 457,121.

*To all whom it may concern:*

Be it known that I, LOUIS GEMMER, a citizen of the United States, residing at Aurora, in the county of Kane and State of Illinois, have invented certain new and useful Improvements in Railways, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to railways, and has specially in view certain improvements in the track-supporting, strengthening and positioning means which coöperate to form a unitary structure possessing the maximum of strength and in which the danger of "spreading" or "creeping" of the tracks is reduced to the minimum.

With the above objects in view the invention comprises in its general organization reinforced longitudinally arranged rail or track ties which are formed so that they have an interlocking engagement with the roadbed, transversely extending rails braces and fastenings, and rail base engaging washers which coöperate with bolts for fastening the rails to the ties.

In carrying out the invention as generally stated above it will of course be understood that the essential features of the invention are susceptible to structural changes and variations, but certain preferred and practical embodiments of the same are shown in the accompanying drawings, in which—

Figure 1 is a perspective view of the invention showing its application to the ordinary rails. Fig. 2 is a vertical sectional view of the same taken on the line 2—2 thereof. Fig. 3 is a similar sectional view, taken on the line 3—3, Fig. 1. Fig. 4 is a longitudinal sectional view taken on the line 4—4, Fig. 3, showing the manner of forming the joint between the ends of the rails. Fig. 5 is a sectional view taken on the line 5—5, Fig. 1, showing the manner of connecting the base flange engaging brace. Fig. 6 is a similar view showing the connection between the web of the rails and the brace connected thereto. Fig. 7 is a perspective view of a portion of a railway, showing the use of a modified form of tie. Fig. 8 is a sectional view of a modified form of my invention, showing a rail and tie formed in one piece.

Like characters of reference designate corresponding parts.

Referring to the accompanying drawings 1 designates the longitudinally arranged rail supporting ties, which are of a hollow arch formation providing the depending side flanges 2—3 which enter into the roadbed and insure of the tie having a firm interlocking engagement therewith. Said ties may be of any suitable length, and are provided with reinforcing corner pieces 4—5 which are preferably arranged to extend across the joint formed by the meeting ends of the ties so as practically to make said ties continuous. The arrangement of the corner pieces and their means for fastening to the ties is best shown in Fig. 4 of the accompanying drawings, and by reference to said figure it will be seen that said corner pieces have the same general contour as the ties which provide a horizontal flange 6 which supports the tread surface of the tie and a depending side flange 7 which rests against the side flange of the tie and which, when the tie is embedded in the roadbed, forms a rigid support therefor.

The tread surfaces of the ties are preferably flat as indicated at 8 and have a strip of cushioning material 9 laid thereon, said strip being preferably of heavy paper coated with tar, which in addition to forming a cushion for the rails 10, also serves to deaden the sound due to traffic on said rails. The rails 10 may be of the usual or any preferred type the base flanges 11 of which have the usual bolt notches or openings 12 formed therethrough for the reception of the fastening bolts 13 which extend upwardly through the corner pieces, the tie treads and said notches, and also pass through rail base engaging washers 14 having a flattened bearing surface 15 for the locking nuts 16. Said washers have substantially right angular faces on their under surface which provide a bearing face inclined precisely like the rail base flange, as indicated at 17, which terminate in a shoulder 18 that abuts against the end of said flange, said shoulder being thickened and having its lower end resting on the tread of the tie. This type of washer serves to securely bind the rail in engagement with the tie when the fastening bolts are in position and their locking nuts securely screwed upon their ends, and also provide for a flat bearing surface for the nuts, which facilitates the screwing of the same to their locking position.

Transversely extending rail base flange connecting braces 19 are also employed to insure a proper relative positioning of the rails, said braces extending across the space between the rails and having their ends provided with base flange engaging portions 20 which are similar in all respects to the washers 14, just described, and which have fastening bolts 21 passing through them and the flanges, and the tie, nuts 22 being carried by said bolts which bind upon the flat upper surfaces of said ends, in the same manner as that described in connection with the description of the base flange engaging washers 14. And as a further securing means for preventing spreading of the rails, braces or tie-rods 23 are employed which have a threaded engagement with openings 24 formed in the webs 25 of the rails, locking nuts 26—27 being employed for securely holding said tie rods in engagement with said rails.

The joints between the rail ends are formed through the medium of a transversely arranged brace, designated in its entirety by the numeral 28 and preferably composed of two flat bars 29—30 which are suitably secured together as by rivets 31 or like fastening means, said braces being arranged with their flat sides together and presenting a downwardly curved lower edge 32 which projects below the plane of the tread surface of the longitudinally arranged ties so as to be in a position to engage with the roadbed. By reference to Figs. 1 and 3 of the accompanying drawings it will be observed that said braces 29 are provided with outturned end flanges 33—34 having bolt openings formed through them which register with similar openings formed in the webs of rails adjacent to their ends and through which registering openings bolts 35 are passed which are locked in position by means of the jam nuts 36. The arrangement of the end flanges of the braces is such that they extend on both sides of the meeting ends of the rails, and when in their fastened position, effectively serve to retain the rails in a relative position and therefore tend to prevent any relative "spreading" or "creeping" of the rails. As a further securing means, the joint between the meeting ends of the rails may be provided with fish plates 37 which cover said joint and which are provided with bolt holes registering with the bolt holes formed through the rail webs and the end flanges of the braces, the jam nuts being preferably on the end of the bolts which project through said fish plates.

In Fig. 7 of the accompanying drawings a form of tie is shown with which the base flange engaging washer may be used, such tie being adapted to be used transversely across the track and forming a support for each rail. The tie is designated in its entirety by the numeral 38 and is formed of sheet metal, the tread surface 39, sides 40 and ends 41 being integral. This tie is of a hollow form and its sides are inclined outwardly, and the ends 41 are bent downwardly to cover the end openings of the tie. This form of tie provides for a firm engagement with the roadbed, as it will be obvious that the inclined sides and the ends thereof will "cut" into the roadbed and thereby insure of a firm interlocking engagement.

From the foregoing description it will be understood through the described form of ties used a substantial support for the rails is provided, which with the described form of braces, and the means for fastening the rails to the said ties, assures of the rails being at all times held in a rigid relative position.

Fig. 8 is another embodiment of my invention, showing a rail and tie formed in one piece. The base $8^a$ of the rail is provided with downwardly flared edges or sides $2^a$ and $3^a$ thereby constituting a tie. The rail $25^a$ is formed directly above the same, and integrally connected thereto.

Claims:—

1. In combination with the rails, longitudinally arranged hollow metallic ties provided with flat upper surfaces forming seats for said rails, means for fastening said rails to said ties, transversely arranged brace rods connecting the oppositely disposed rails, and tie rods connecting the webs of oppositely disposed rails.

2. In combination with the rails, longitudinally arranged hollow reinforced ties therefor, means for fastening said rails to the ties, brace rods connecting the base of each rail with the rail opposite, tie rods connecting the webs of oppositely disposed rails, and brace rods connecting the oppositely disposed rails and forming a joint between the meeting ends of the rails.

3. A railway comprising longitudinally arranged ties, rails supported thereon, means for rigidly fastening said rails to said ties, and a plurality of brace rods connecting the oppositely disposed rails and engaging respectively with the rail bases, the rail webs, and the meeting ends of the rails.

4. A railway comprising longitudinally arranged hollow ties provided with a flat upper surface forming a seat for the rails, corner strips for reinforcing said ties, means for fastening the rails to said ties, cross braces connecting the oppositely disposed rails and also adapted to engage with the bases of the rails, and additional cross braces respectively connecting the webs of oppositely disposed rails, and connecting oppositely disposed rails at their joints.

5. A railway comprising longitudinally arranged hollow arch shaped ties reinforced at their meeting ends, rails supported on and rigidly connected with said ties, cross braces for connecting the oppositely disposed rails

at their webs and at their bases, and additional cross braces for connecting the rails at their meeting ends, said additional cross braces being provided with outturned end portions forming web engaging flanges which are disposed on each side of the meeting end of the rails.

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

LOUIS GEMMER.

Witnesses:
GUSTAV C. KRULL,
OTTO F. GLAUER.