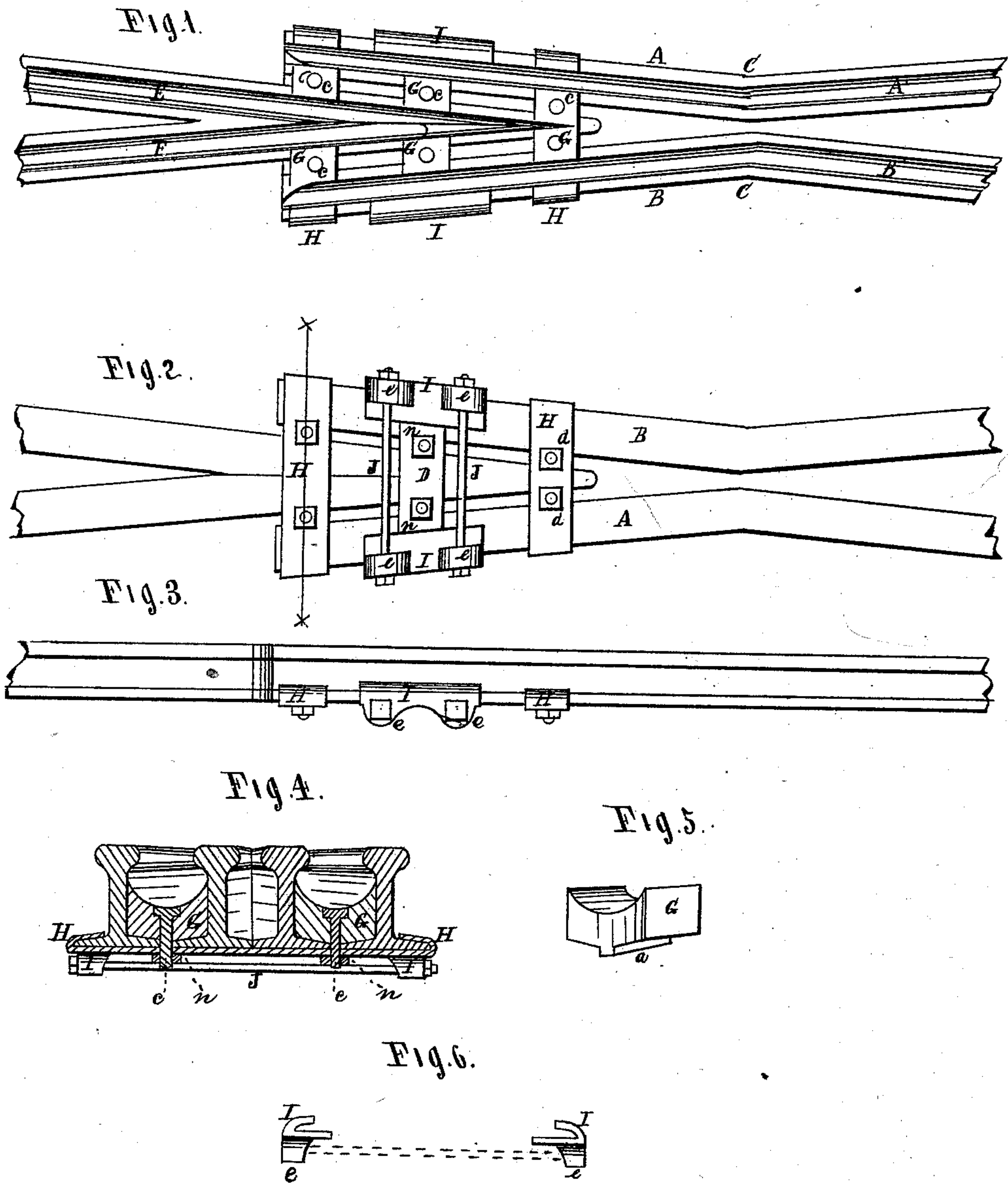


W. C. QUIGLEY.  
Railway Frog and Crossing.

No. 222,734.

Patented Dec. 16, 1879.



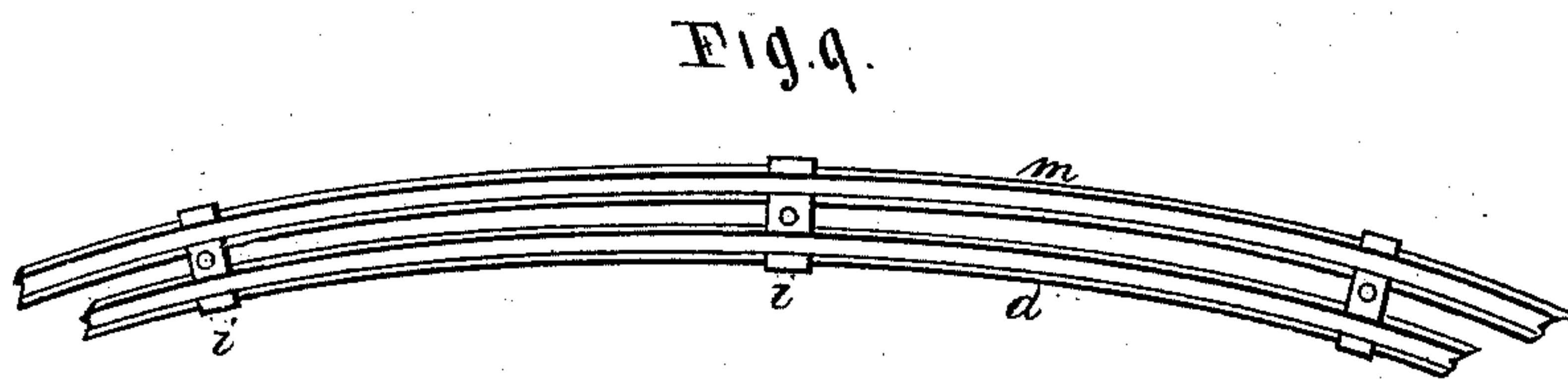
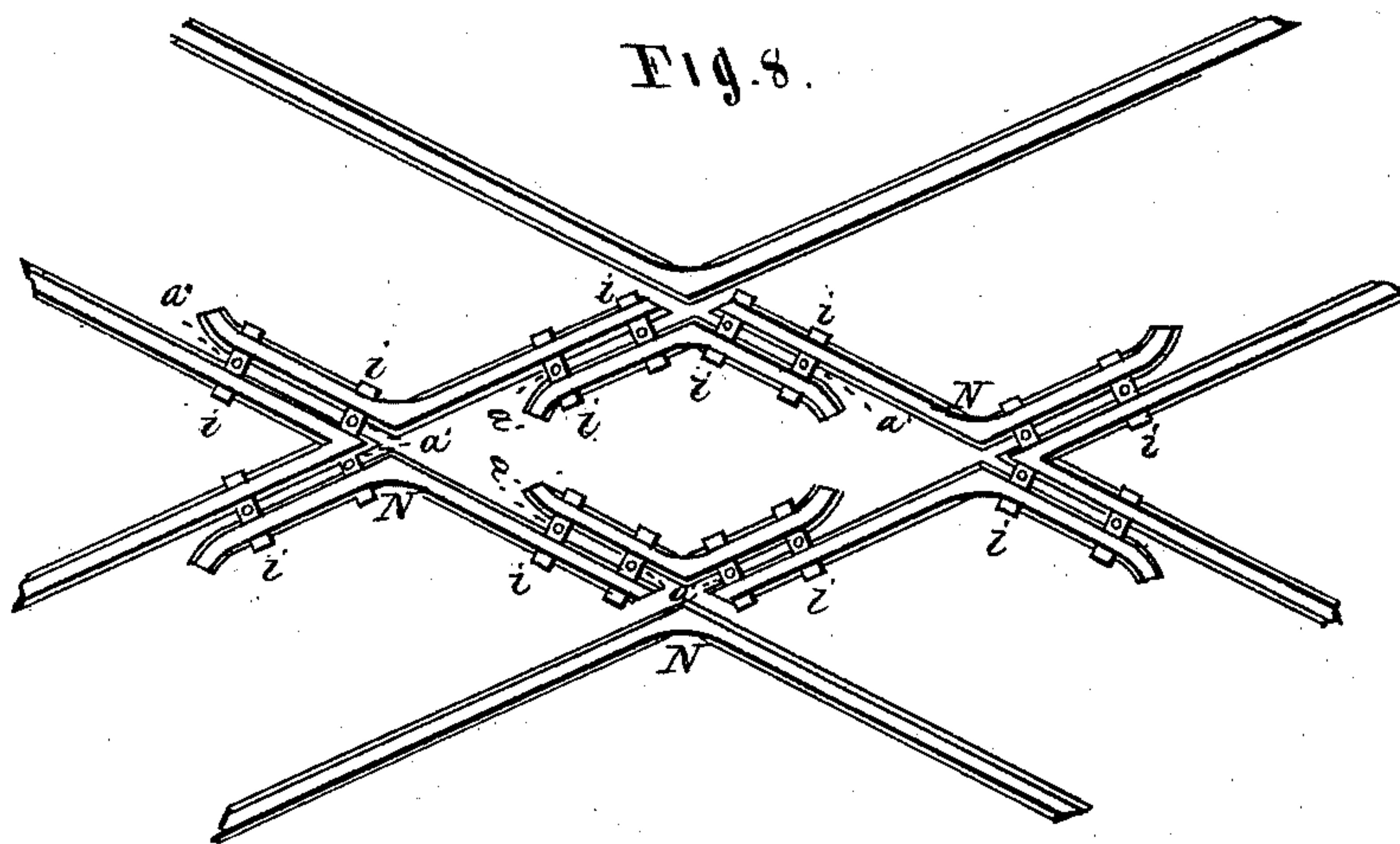
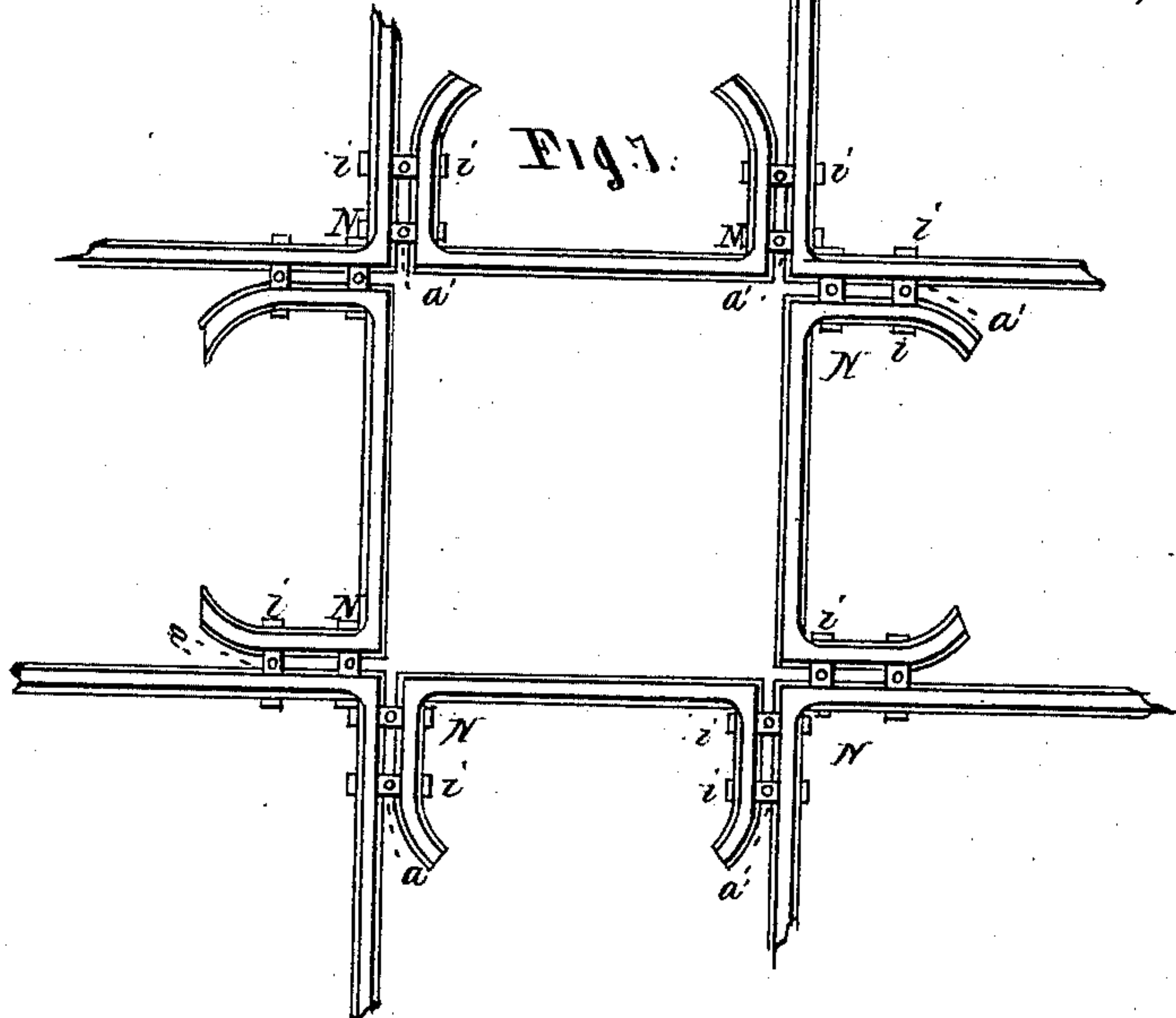
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# UNITED STATES PATENT OFFICE.

WILLIAM C. QUIGLEY, OF GALION, OHIO.

## IMPROVEMENT IN RAILWAY FROGS AND CROSSINGS.

Specification forming part of Letters Patent No. **222,734**, dated December 16, 1879; application filed September 30, 1879.

*To all whom it may concern:*

Be it known that I, WILLIAM C. QUIGLEY, of Galion, in the county of Crawford and State of Ohio, have invented a certain new and Improved Railway Frog and Crossing Combined; and I do hereby declare that the following is a full, clear, and complete description of the same.

Railway-frogs as usually constructed consist of a heavy iron bed-plate, upon which the several rails and guards composing the frog are laid, and thereto secured by bolts, and the several sections of the rails secured to each other by fish-plates.

In constructing such frogs holes are required to be made in the web and foot of the rails for the bolts, whereby the parts of the frog are secured to each other and to the bed-plate. The holes thus made in the rails weaken them so that they frequently break through the holes, rendering the frog useless until repairs are made; also, the heavy bed-plate is a matter of expense, adding largely to the cost of the structure.

To avoid making bolt-holes in the rails and to dispense with the use of the bed-plate is the purpose of constructing a frog substantially as set forth in the following description, reference being had to the accompanying drawings for illustration, in which—

Figure 1 is a plan view of a frog. Fig. 2 is a view of the under side. Fig. 3 is a side view. Fig. 4 is a transverse section taken in the line *x x*. Figs. 5 and 6 are detached sections.

The several figures on Plate 2 of the drawings show the principle of the frog structure as applied to railway crossings and curves, to which reference will be made in the course of this description.

Like letters of reference refer to like parts in the several views.

As seen in the drawings, A and B represent the side rails of the frog with the appropriate curve at C C, to give them the direction of the rails of the intersecting tracks, and of which said rails they form a part.

E and F are the central convergent rails of the frog, which are also parts of the rails of the intersecting tracks, the rail E being a continuation of the diverging part B' of the rail

B, and the rail F a continuation of the divergent part A' of the rail A. These several parts of the frog are substantially like those in ordinary use, and arranged in the same manner.

Instead of securing these several parts of the frog in proper relation to each other by bolting them down upon a solid iron bed-plate, and also by bolts passing through the web of the rails, I accomplish the same end by the following device: Between the rails A and B and the converged ends of the rails E and F are inserted stay-blocks G, adapted to fill the space between the two rails, as shown in Figs. 1 and 4, in which it will be observed that each stay-block abuts against the web of the rails and extends upward to or near the head thereof, at the same time resting upon the foot of the rails, as shown in said Fig. 4.

Along the under side of the stay-block is a rib, *a*, Fig. 5, (a perspective view of one of the blocks.) Said rib *a* lies between the edges of the foot of the rails and is flush with the under side thereof.

The upper surface of the stay-block is grooved, to permit the flange of the car-wheels to pass over without touching. Transversely across the under side of the rails, and directly under each of the blocks G, is a clamp, H, Fig. 2, consisting of a bar or plate of iron, the extreme ends of which are turned upward and back over upon itself, forming a hook adapted to fit or embrace the foot of the rail, as shown in Fig. 4.

It will be observed that said clamps are of different lengths, according to the distance across the rails at the place or places they are to occupy on the tapering form of the structure. Practically it is well to place the clamps upon the rails before the stay-blocks are inserted between them, (the rails,) which being done, the clamps are then driven toward the spreading ends of the side rails, A B, thereby drawing them strongly together, and clamping the ends of the rails E F and the blocks G firmly between them. The side rails, A B, and the converged ends of the rails E F, when thus bound together by the clamps, are further secured by the bolts *c*, Fig. 4, passing downward through the stay-block to the under side of the clamp, and drawn tightly therein by nuts *n*.



The several parts of the frog thus bound together laterally by the clamps and vertically by the bolts constitute a structure of great strength and firmness, so that it can be lifted bodily and carried to the place where it is to be used, at which place it is laid down upon ties and secured thereto, as are the rails of the track.

To prevent the clamps from slipping when once in place, the bolts *c* and the holes for the same are made a little larger in diameter than the space between the feet of the rails in which the rib *a* of the stay-block is inserted. Therefore in boring said holes a nick is made in the edge of the foot of the rail, into which the bolt fits, securing the clamp from slipping, as aforesaid.

From the above it will be seen that the structure is made without a bed-plate of any kind, while as frogs are usually made the bed-plate is the most expensive part of the structure, in consequence of its great size and weight; also, there are no holes bored in the web of the rails; hence they are not liable to break, as is the case with the ordinary rails which have holes bored in them.

In the event a frog of unusual strength is required, a clamp is used consisting of the clips I, Figs. 1 and 2, an end view of which is shown in Fig. 6. Said clips are placed, respectively, upon the outer edges of the rails A B, so that the bolt-eyes *e* thereof will be below the under side of the rails, as shown in Fig. 2. Bolt-rods J are then passed from clip to clip, whereby the rails are drawn transversely firmly together, binding the stay-blocks G between them. A plate, D, Fig. 2, is placed across the rails under the bolt-rods between the clips. Through said plate the bolts *c* of the stay-blocks pass, by which the blocks and plate are drawn firmly to the rails.

The principle involved in the construction of the above-described frog is equally applicable to railway-crossings, as illustrated in Figs. 7 and 8 of Plate 2 of the drawings. Said Fig. 7 represents a right-angled crossing of the tracks, in which *a'* indicates the stay-blocks and *i* the plate-clamps, corresponding to the clamps and blocks shown in Plate 1. Fig. 8 shows a diagonal crossing embracing the same

constructive features. Fig. 9 represents a curve in which the track-rail *m* and the guard-rail *d* are secured to each other substantially as herein described relative to the frog. These several structures, when built as described, can be taken in their entirety to the place where they are to be laid down for use.

In such places where the frog or the crossing is subject to severe wear, and therefore requiring a renewal of parts from time to time, and not a renewal of the entire structure, it is preferred to use the clip I and bolts for clamping the rails transversely instead of the plate-clamps H, for the reason that the clips can be taken off, and one or more parts of the structure renewed without disturbing the entire work, which cannot be so easily and readily done when the plate-clamps are used.

It will be observed that each elbow N of the crossings is re-enforced by the inner angle of the elbow being filled or thickened by an increase of metal at that point, thereby giving to the corners greater strength and wearing-surface where the greatest strain and wearing of the structure occur, thereby adding to the strength and durability of the work.

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

1. In the structure of railway frogs and crossings, a stay-block provided with a rib, *a*, interposed between the rails of the said structure so that the ends of the stay-block abut against the webs of the rails, and the lower side thereof is adapted to rest upon the bases of the rails with the rib *a* of the block between said bases of the rails, substantially as described, and for the purpose set forth.

2. The combination of the stay-blocks G, plate-clamps H H and D, clamping-clips I, and bolts J J, substantially as and for the purpose described.

3. In combination with the stay-blocks, bolt, clamping-plate D, and rails, the clamping-clips I and bolts J, as herein described, and for the purpose set forth.

WILLIAM C. QUIGLEY.

Witnesses:

GEO. M. ZIEGLER,  
J. G. DAVIS.