

(No Model.)

F. A. WILLIAMS.

METALLIC RAILWAY TIE AND FASTENING.

No. 255,554.

Patented Mar. 28, 1882.

Fig. 1.

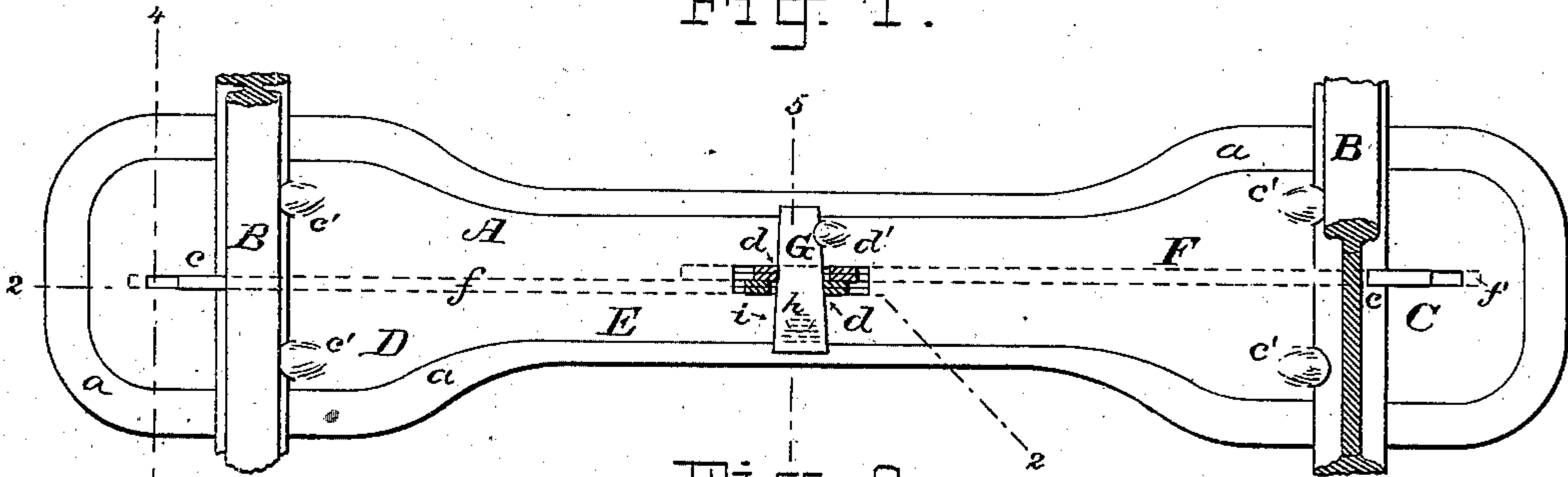


Fig. 2.

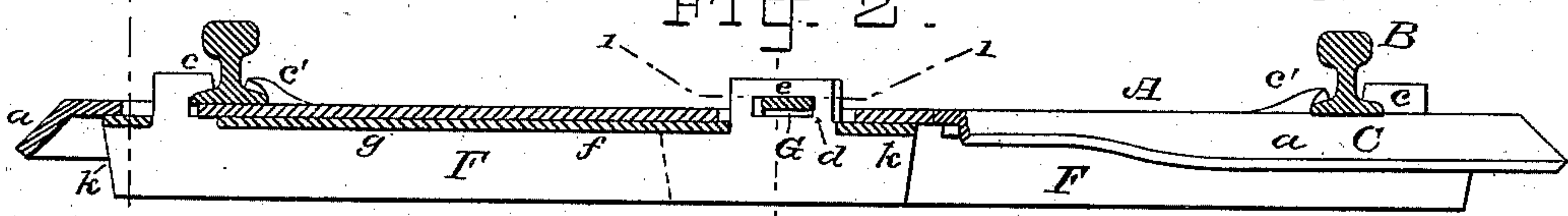


Fig. 3.

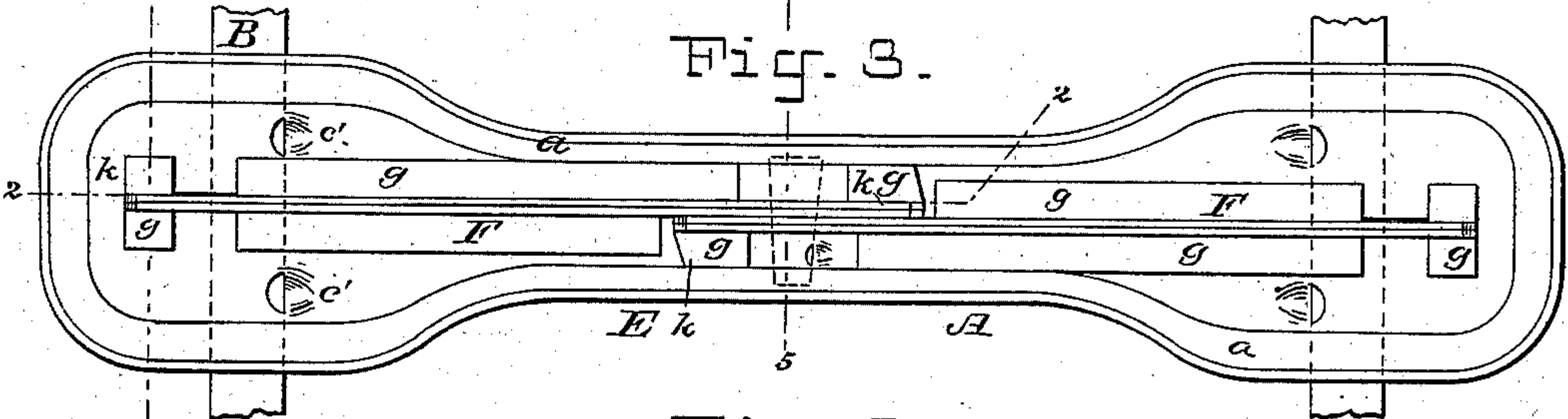


Fig. 5.

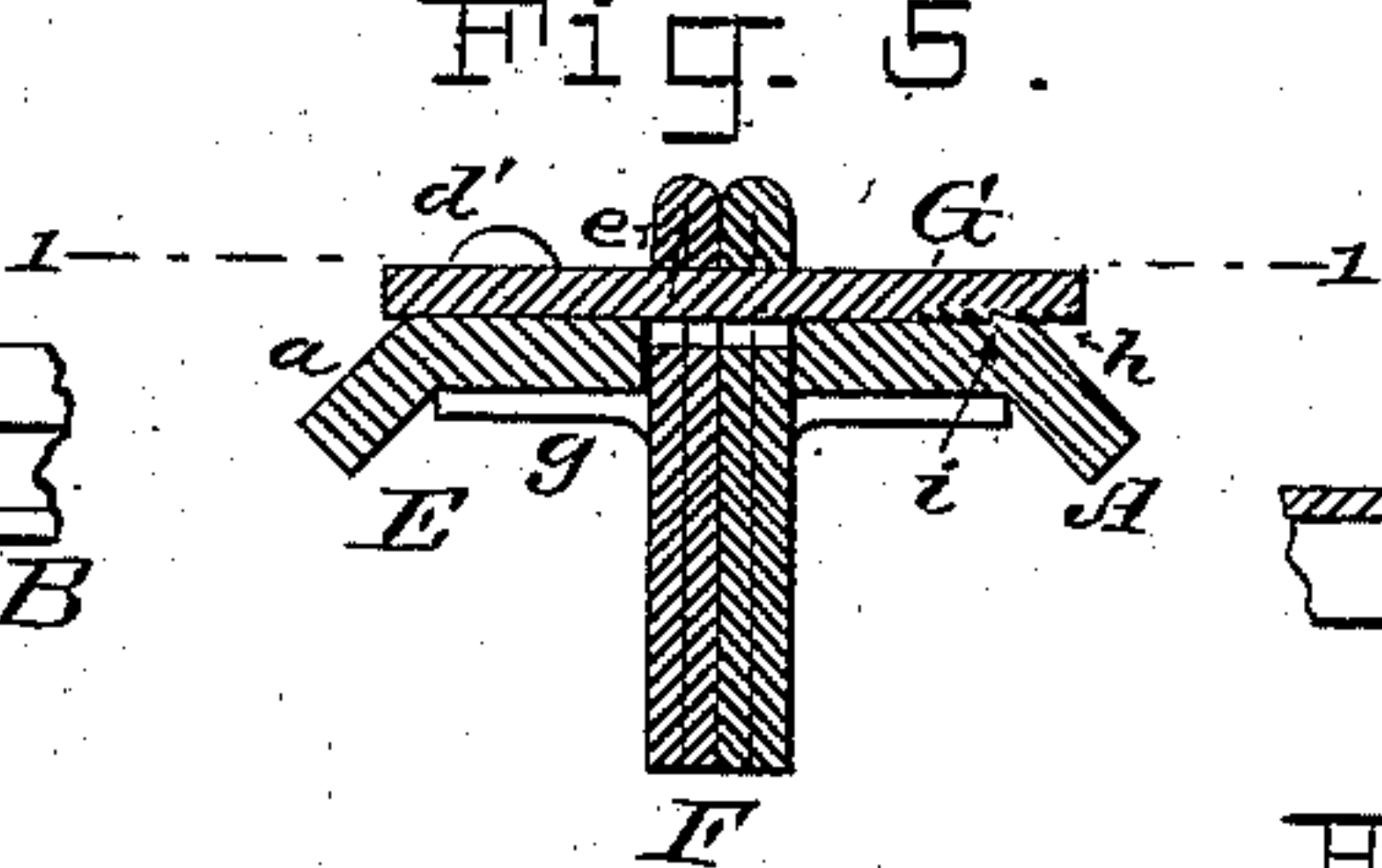


Fig. 9.

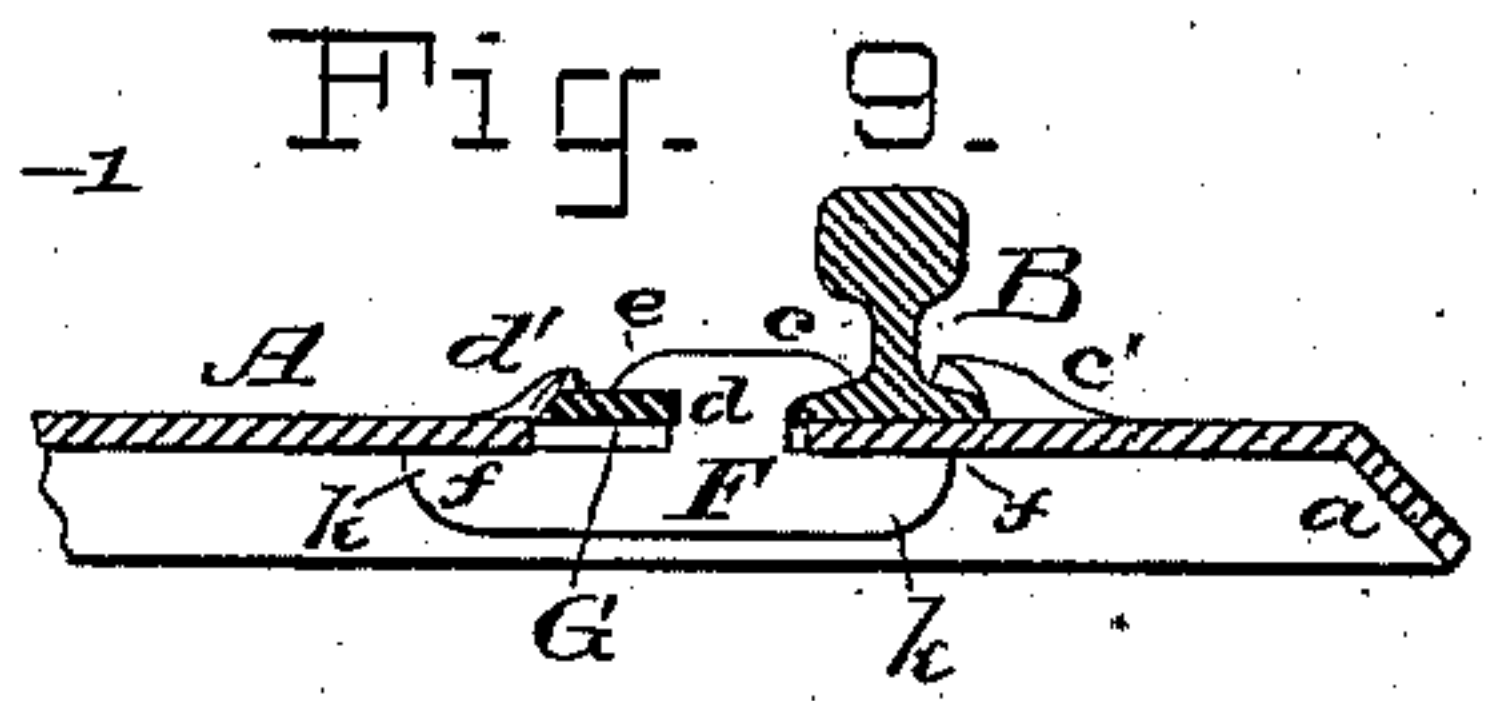


Fig. 4.

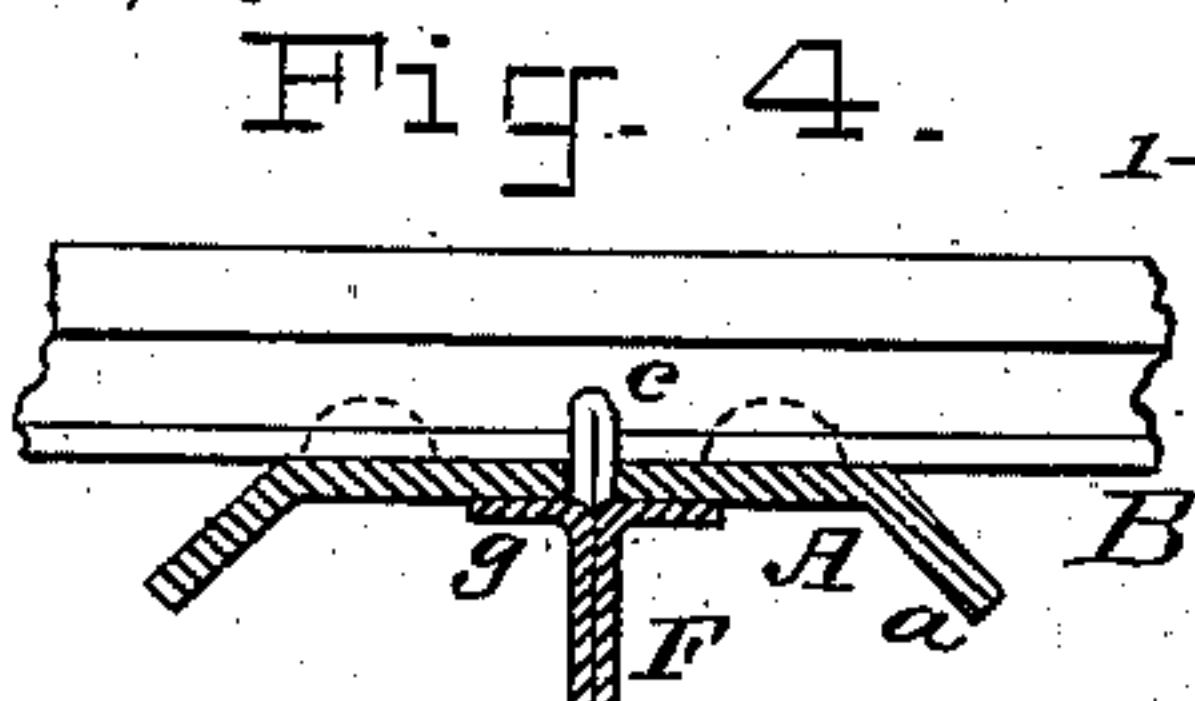


Fig. 8.

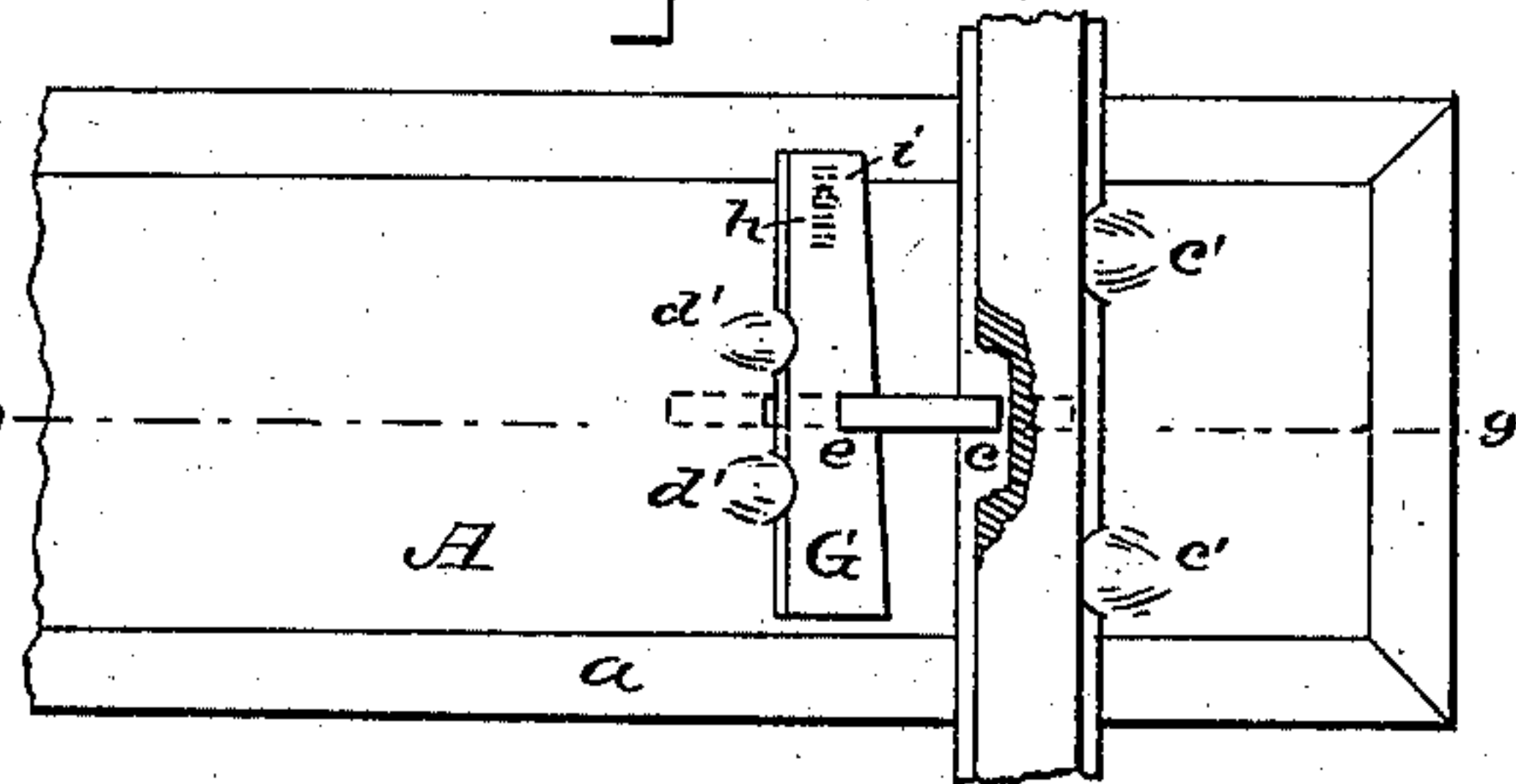


Fig. 6.

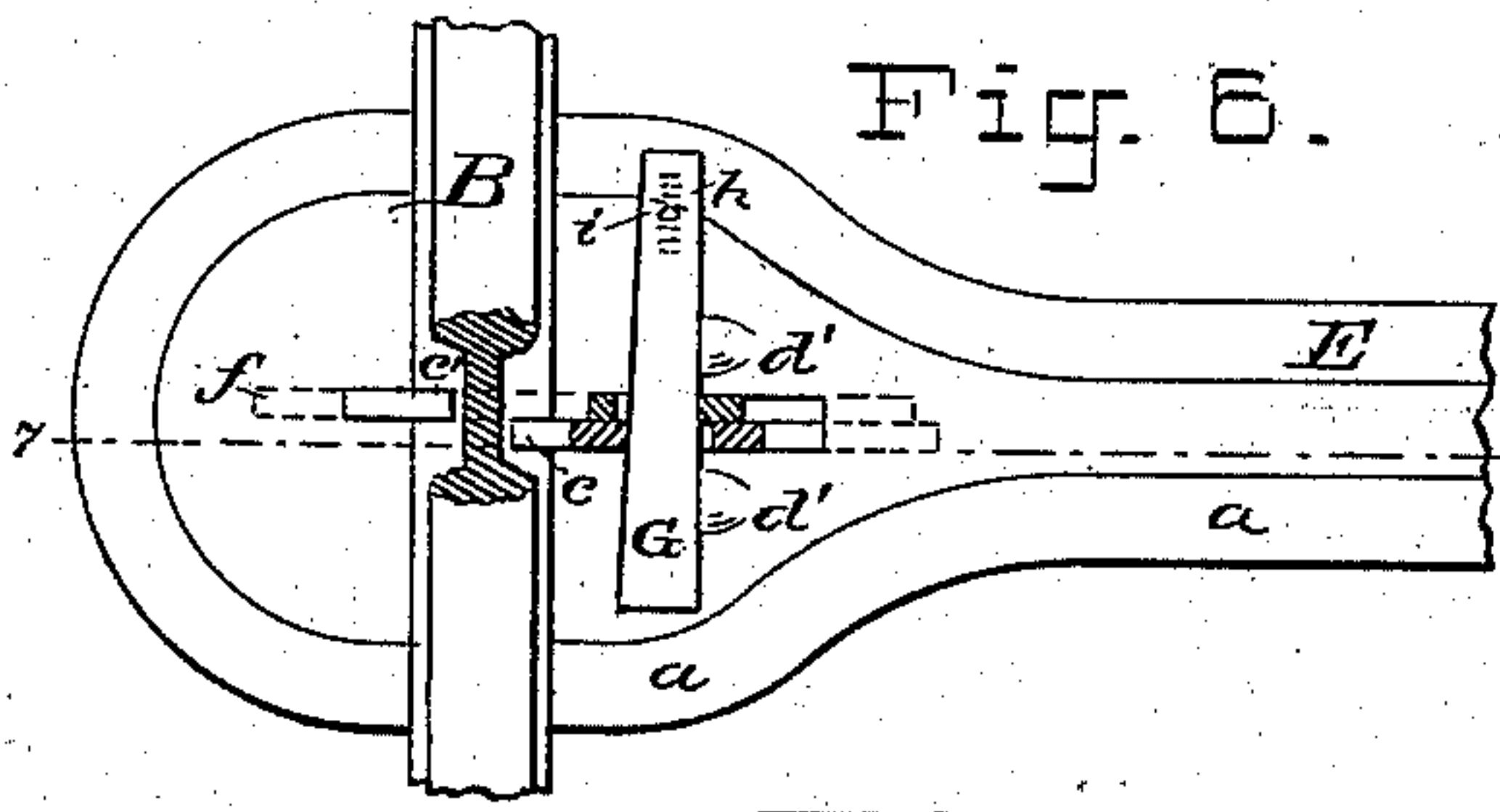
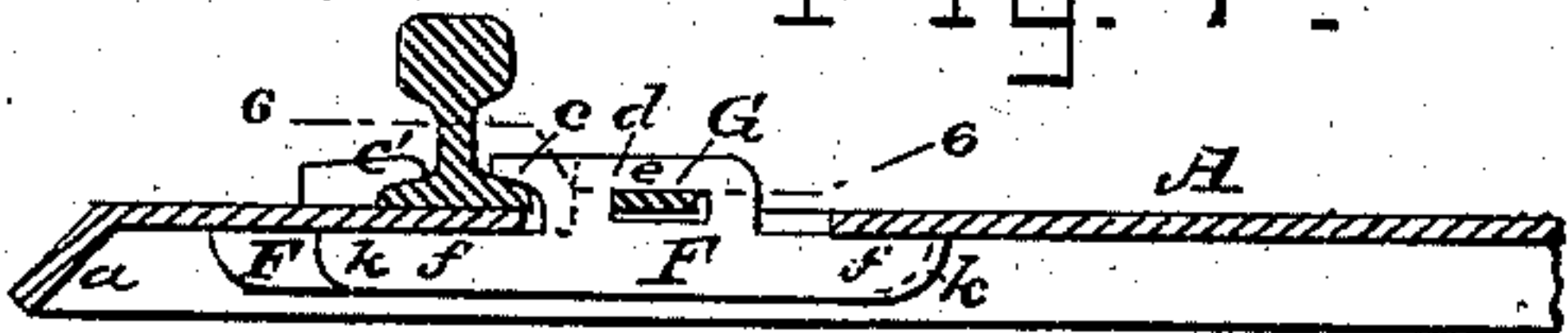


Fig. 7.



ATTEST

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METALLIC RAILWAY TIE AND FASTENING.

SPECIFICATION forming part of Letters Patent No. 255,554, dated March 28, 1882.

Application filed December 27, 1880. Renewed August 30, 1881. (No model.)

To all whom it may concern:

Be it known that I, FRANCIS A. WILLIAMS, a citizen of the United States, residing in the city, county, and State of New York, have invented certain Improvements in Metallic Railway-Ties and Means of Fastening the Rails Thereto, of which the following is a specification.

The object of my invention is to provide metallic ties or sleepers for railways with a simple, ready, and secure means for fastening the rails thereto.

In the accompanying drawings, Figure 1 is a plan of my improved tie, partly in horizontal section cut in the plane of the dotted line 1 1 in Figs. 2 and 4. Fig. 2 is a side elevation of the same, partly in vertical longitudinal section cut in the plane of the dotted line 2 2 in Figs. 1 and 3. Fig. 3 is an inverted plan or bottom view. Fig. 4 is a vertical transverse section cut in the plane of the dotted line 4 4 in Figs. 1, 2, and 3; and Fig. 5 is a vertical transverse section cut in the plane of the dotted line 5 5 in Figs. 1, 2, and 3, and enlarged to twice their size. The remaining figures show modifications, Figs. 6 and 7 illustrating one form and Figs. 8 and 9 another. Fig. 6 is a plan, partly in horizontal section taken along the line 6 6 in Fig. 7. Fig. 7 is a vertical longitudinal section taken along the line 7 7 in Fig. 6. Fig. 8 is a plan; and Fig. 9 is a vertical longitudinal section taken along the line 9 9 in Fig. 8.

Referring to the drawings, A is the metallic tie or sleeper, made preferably of wrought-iron or steel, although it may be made of other metal, either wrought or cast. It consists essentially of a flat plate, or one which is flattened at its ends, to form seats for the rails, extending from rail to rail. It has preferably a contracted central portion, E, and a turned-down coping or flange, a; but these are not essential.

B B are the rails, and C C are, as a whole, the provisions for securing the rails to the tie. It is to these provisions that my present invention relates.

F F are clamps, in the form of substantially flat blades or plates, which are arranged lon-

gitudinally of the tie, with their body portions 50 beneath the same. Each clamp is provided with an overhanging nose, c, to bear upon and confine the base of the rail, and with a shoulder, d, to engage a wedge, G, which rests upon the upper surface of the top plate of the tie. 55 The shoulder d and nose c are formed on upwardly-projecting portions of the clamp, which pass up through slots in the tie, and they are arranged to bear in opposite directions, so that the driving in of the wedge forces the nose 60 closely against the rail. Adjacent to the shoulder d is an overhanging lip or downwardly-bearing shoulder, e, which extends over the wedge G and confines the latter down in place. The shoulder e and nose c together hold up the 65 clamp and sustain it in place, keeping its body portion drawn up close against the under surface of the tie and making a firm connection between them. The body portion of the clamp has an extended bearing surface or shoulder, 70 f, which bears upwardly against the under surface of the tie, and it is provided with elongated ends k k, extending beyond the nose c and the projection bearing the shoulders d e. These ends bear upwardly against the tie and 75 serve to stiffen it in the same manner as ribs formed on its under side would do. The body portion of the clamp is elongated sufficiently and extended downwardly sufficiently to give it a decided hold in the earth or ballast and 80 enable it to serve in the place of the usual central longitudinal downwardly-projecting rib commonly formed as a part of the tie, as best shown in Figs. 2 and 4. In order to stiffen it against strains tending to bend it up against 85 the under side of the tie, I provide it with laterally-projecting flanges g g, (shown in Figs. 2, 3, 4, and 5,) which rest against the under surface of the tie and form part of the bearing-surface f. 90

The clamps F F, constructed as described, are equally applicable to wrought and cast metal ties, add materially to the stiffness and strength of the tie, and increase its hold upon the ground or ballast. When provided with 95 the flanges g g, and extended almost the entire length of the tie, as shown in Figs. 1 to 5, they perform these functions to the fullest extent.

In this construction each clamp extends from near one end of the tie to somewhat beyond the middle thereof, where the two lap, and where they are both engaged by the single wedge G. Each rail is seated on one side against one or more fixed lugs or stops, c' , which overhang its base, and is engaged on the other side by a nose, c , of one of the clamps. The driving in of the wedge forces the nose against the rail, so as to clamp the rail fast between it and the fixed lug. In order to prevent the displacement of the wedge under the strain of the two clamps, I provide a fixed lug, d' , against which one of its edges bears, and which is opposed to the shoulder d on the adjacent clamp, which tends to force the wedge out of line.

In Figs. 6 and 7 I have shown two clamps, F, applied to each rail, thus avoiding the necessity of providing the tie A with fixed lugs c' . The nose c of one of the clamps takes the place of a fixed lug and engages one side of the rail. This clamp abuts against the extreme end of its slot, and the rail is forced against it by driving up the nose c of the other or movable clamp by means of the wedge. The rail is prevented from moving out of gage by the abutment of the stationary clamp against the end of its slot on one side and by the abutment of the wedge against fixed lugs or stops d' d' on the other side.

In Figs. 8 and 9 I have shown but one clamp acting against fixed lugs c' c' . But one portion of the clamp projects up through the tie, and on this are formed the shoulders d and e and the nose c . The wedge G is re-enforced against fixed lugs d' d' , which are opposed to the shoulder d on the clamp. As the wedge is driven in between the lugs d' and the shoulder d it forces the nose c against the rail. The wedge G may in some cases be arranged just beneath the flat plate of the tie, instead of on top of the same, having its re-enforcing shoulders d' d' in the coping a , through which it may pass, or on the under surface of the tie.

I am well aware that a clamp has been arranged to confine the base of a rail to a metallic tie, and that it is has been forced into contact therewith by a wedge, such being shown in my Patent No. 235,321, of December 7, 1880; and I am also aware that such clamps have been arranged in a slot in the tie and extended beneath the same under the rail, and that the wedge has been re-enforced against fixed lugs formed on the tie, and I make no claim to these features in themselves.

I am also aware that inverted bowls have been used as sleepers to support the rails, one being placed under each rail, and the two being connected by a tie-bar, and that in such construction the rail has been confined between a fixed stop or abutment on the bowl and an overhanging nose on the tie-bar, the latter being driven into firm engagement by a wedge. In this construction the tie-bar acts as a clamp; but it has not the additional function of my clamp—that of a rib to stiffen the plate

which sustains the rail and to engage the ballast, and thereby prevent the displacement of the plate.

In order that the vibration caused by passing trains may not loosen the wedge, it is important that some fastening be provided to hold the same in place when driven. Heretofore this has been accomplished by notching the back edge of the wedge with ratchet-shaped teeth or notches, which are arranged to engage a projection on the tie. This method has the disadvantage that in order to withdraw the wedge it must be bent in the direction of its width until the notches clear the projection, and held in that position while being driven out, or else the projection must be removed or destroyed or the notches obliterated. Furthermore, the means of fastening is in plain sight and obvious, so that evil-disposed persons, knowing how the wedge is fastened, can readily withdraw it. To obviate these objections I have devised the fastening which I will now describe.

The wedge is provided with ratchet-shaped teeth or notches h h on its under side, near one end, and the tie is provided with a slight projection, i , preferably beveled, which takes into one of said notches, as shown in Fig. 5, and effectually prevents the withdrawal of the wedge. I employ for the wedge a comparatively thin plate of steel or other strong and elastic material, which is easily bent or sprung up slightly at its end while confined at its center. In order to withdraw the wedge its ratcheted end is lifted or sprung up slightly by inserting a lever or wedge beneath it until its notches clear the projection, and it is then driven out. The fastening is entirely concealed beneath the wedge, so that only those acquainted with its construction can remove the wedge, and even then some suitable tool is required.

It is not essential that both the teeth h and i should be beveled, as the beveling of either will suffice.

In lieu of making the projection i on the tie and the notches h h on the wedge, the reverse arrangement may be adopted, a single projection, i , being formed in the under side of the wedge, and adapted to take into a notch or notches, h , in the surface of the tie.

I claim as my invention—

1. A metallic railway-tie consisting essentially of a substantially flat plate extending from rail to rail, and provided with stationary stops for engaging the base of each rail on one side, in combination with clamps arranged longitudinally of the tie, with their body portions beneath the same extending downward therefrom in the form of substantially flat blades or ribs, capable of engaging the earth or ballast beneath the tie, and each provided with a nose extending up through the tie and engaging the base of the rail upon the opposite side from said stationary stop, and with a shoulder opposed to said nose and adapted to be engaged by a wedge, in combination with

said wedge adapted to force said nose against the rail, substantially as and for the purpose set forth.

2. A metallic railway-tie, A, consisting essentially of a substantially flat plate extending from rail to rail, and forming a seat therefor, and provided with stationary stops *c' c'* to engage one side of the base of each rail, in combination with clamps F F, arranged beneath the tie, each having a nose, *c*, projecting up through the tie and engaging the base of the rail on the opposite side, a shoulder, *d*, to engage a wedge, and projecting ends *k*, extending beneath the tie beyond said shoulders, in contact with the under surface of the tie, substantially as and for the purposes set forth.

3. A railway-tie, A, consisting essentially of a flat plate of metal, extending from rail to rail and forming a seat therefor, in combination with clamps F F, each arranged beneath the tie with an upward bearing against the under side thereof, provided with a nose, *c*, projecting up through the tie and engaging the base of the rail, and with an upward projection bearing shoulders *d* and *e* to engage the wedge G, and the said wedge arranged on the top surface of the tie, and adapted, when driven, to force the toe *c* against the rail, substantially as set forth.

4. A metallic tie, A, provided with a rail-fastening consisting of clamps F F, arranged to be forced into engagement with the rails by a wedge or wedges, and arranged beneath the

tie, longitudinally thereof, extending downward therefrom in the form of substantially flat blades or ribs, and provided with flanges *g g*, arranged to bear against the under surface of the tie, substantially as set forth.

5. The combination of the tie A, the fixed lugs *c' c'*, the clamps F F, having noses *c c* and shoulders *d d* and *e e*, and the single wedge G, engaging both clamps, substantially as set forth.

6. In a rail-fastening for metallic ties, the combination of a clamp to engage the base of the rail, a wedge to force said clamp against the rail, and the ratchet-projection *i* and notch or notches *h h*, arranged beneath the wedge, so as to be concealed thereby, substantially as and for the purposes set forth.

7. In a rail-fastening for metallic ties, the combination of the clamp F, adapted to engage the rail, the wedge G, formed of slightly-elastic material, and provided with ratchet-notches *h h* on its under side, and the fixed tooth or projection *i* on the tie adapted to engage one of said notches when the wedge is driven, and to be concealed thereby, substantially as set forth.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

FRANCIS A. WILLIAMS.

Witnesses:

ARTHUR C. FRASER,
HENRY CONNETT.