

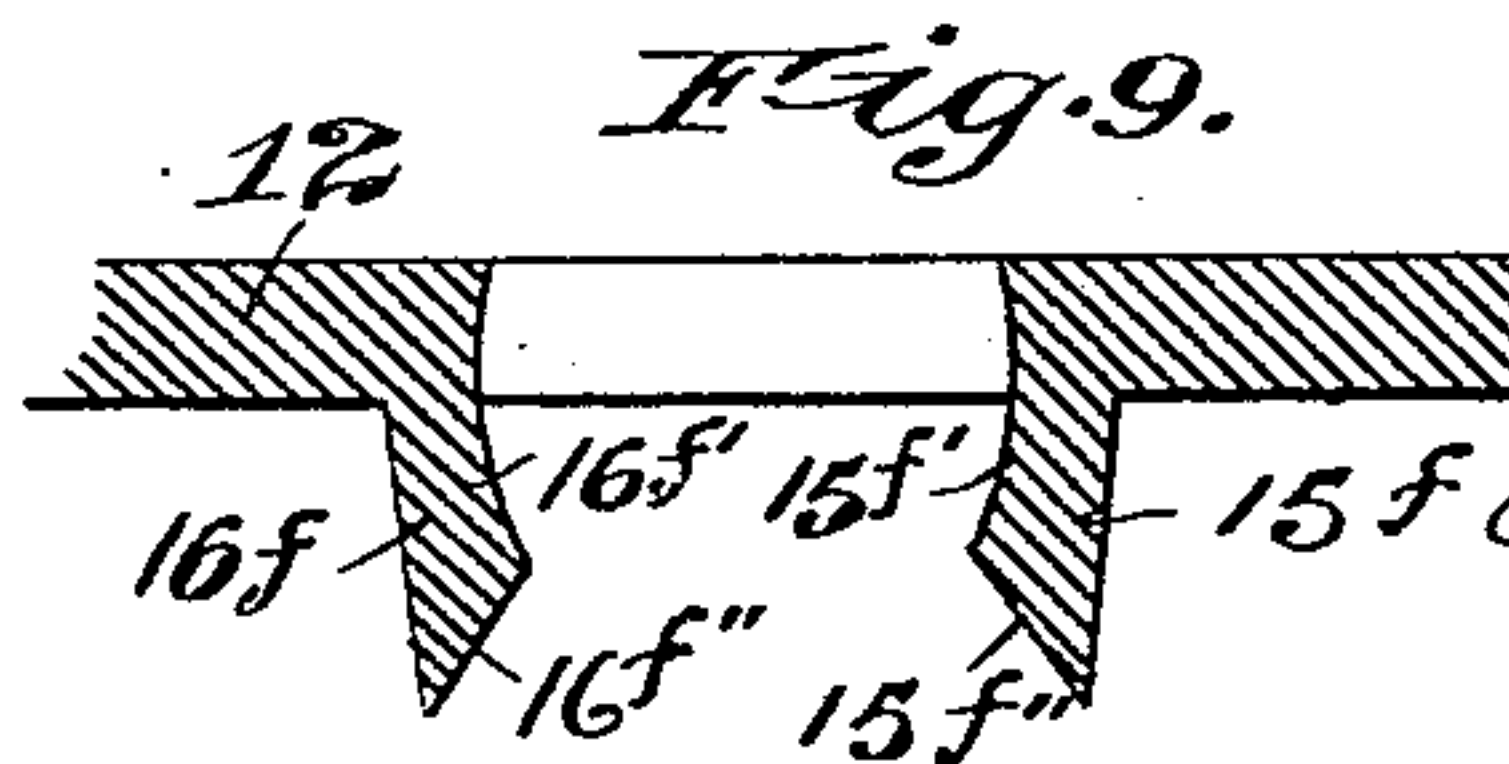
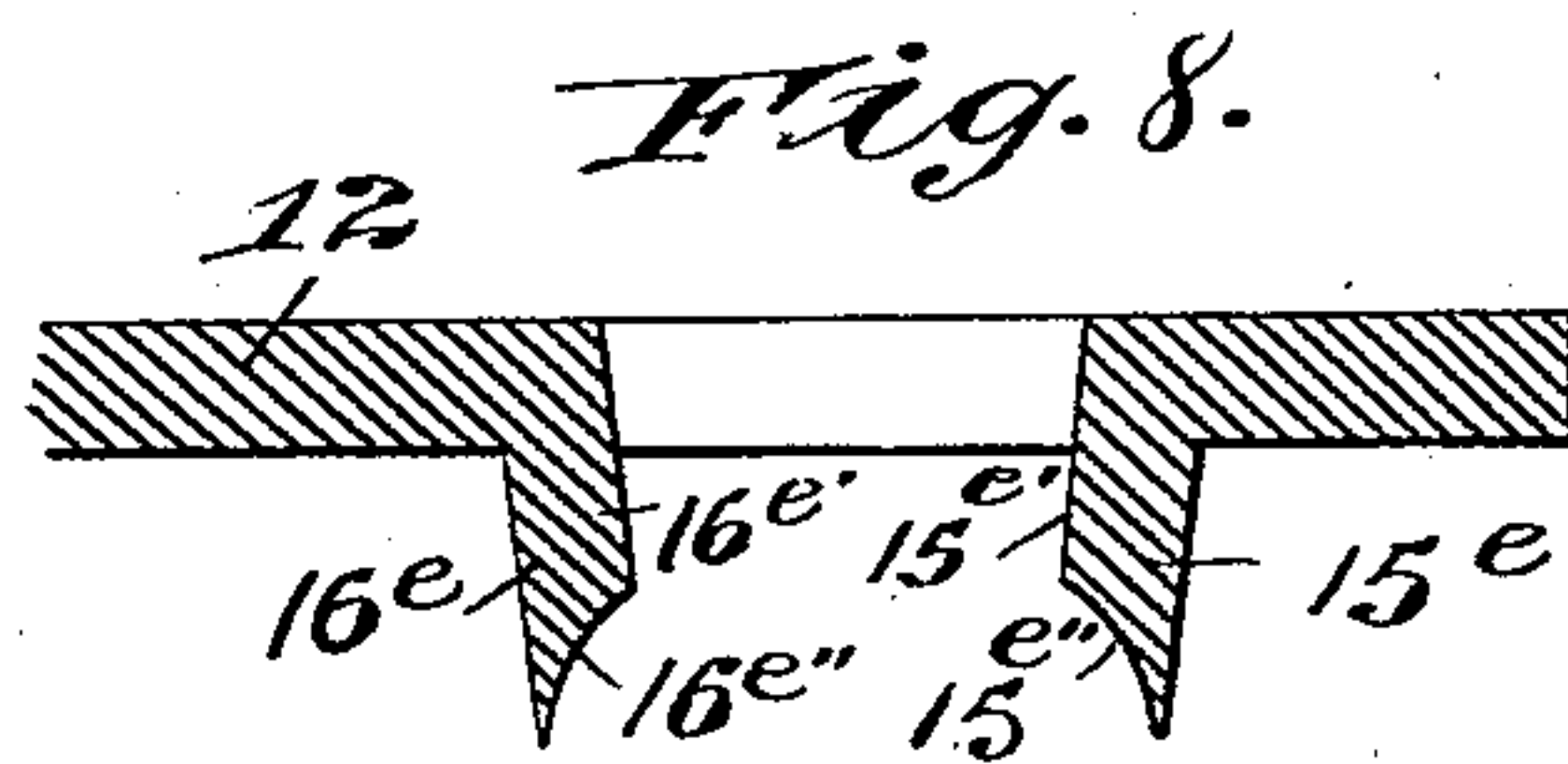
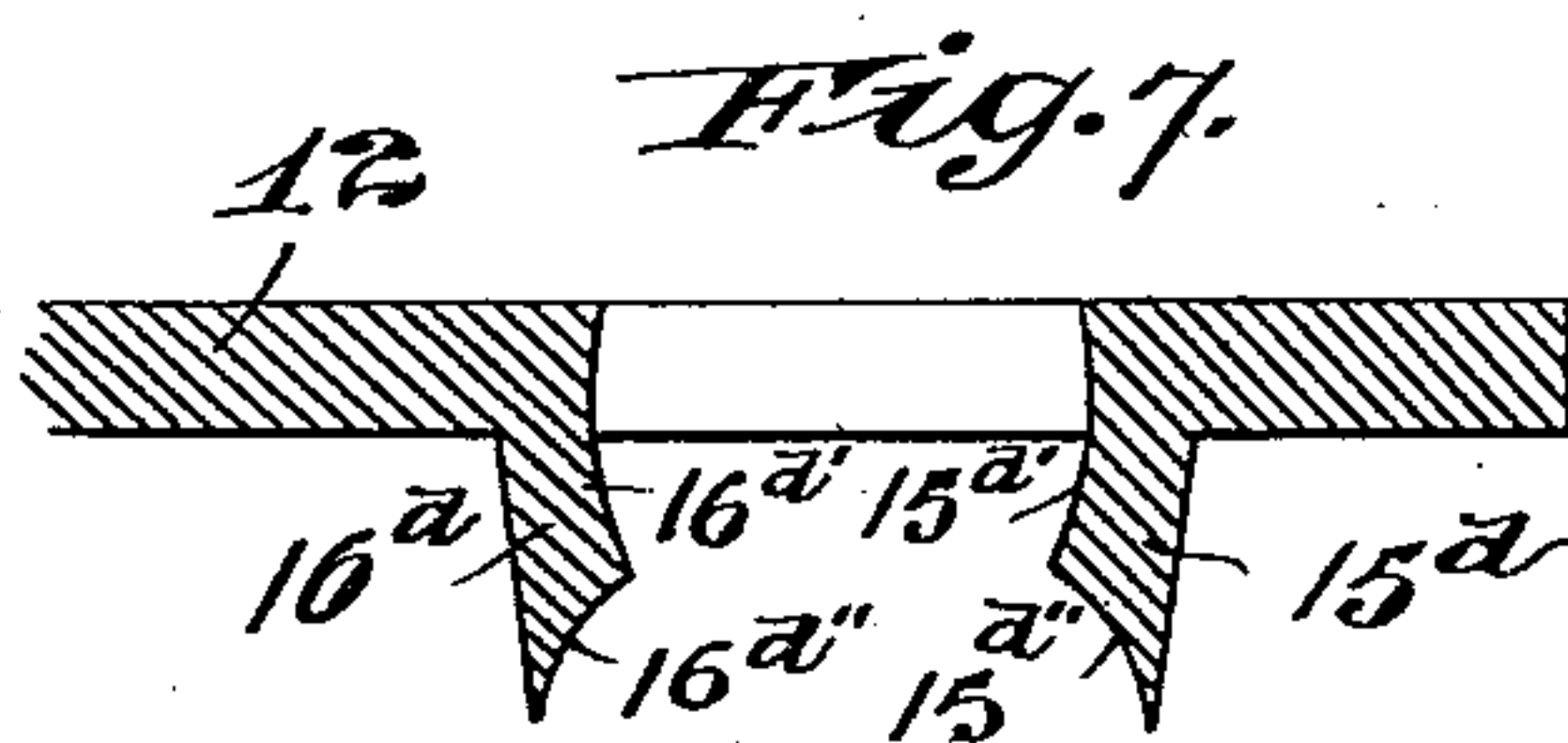
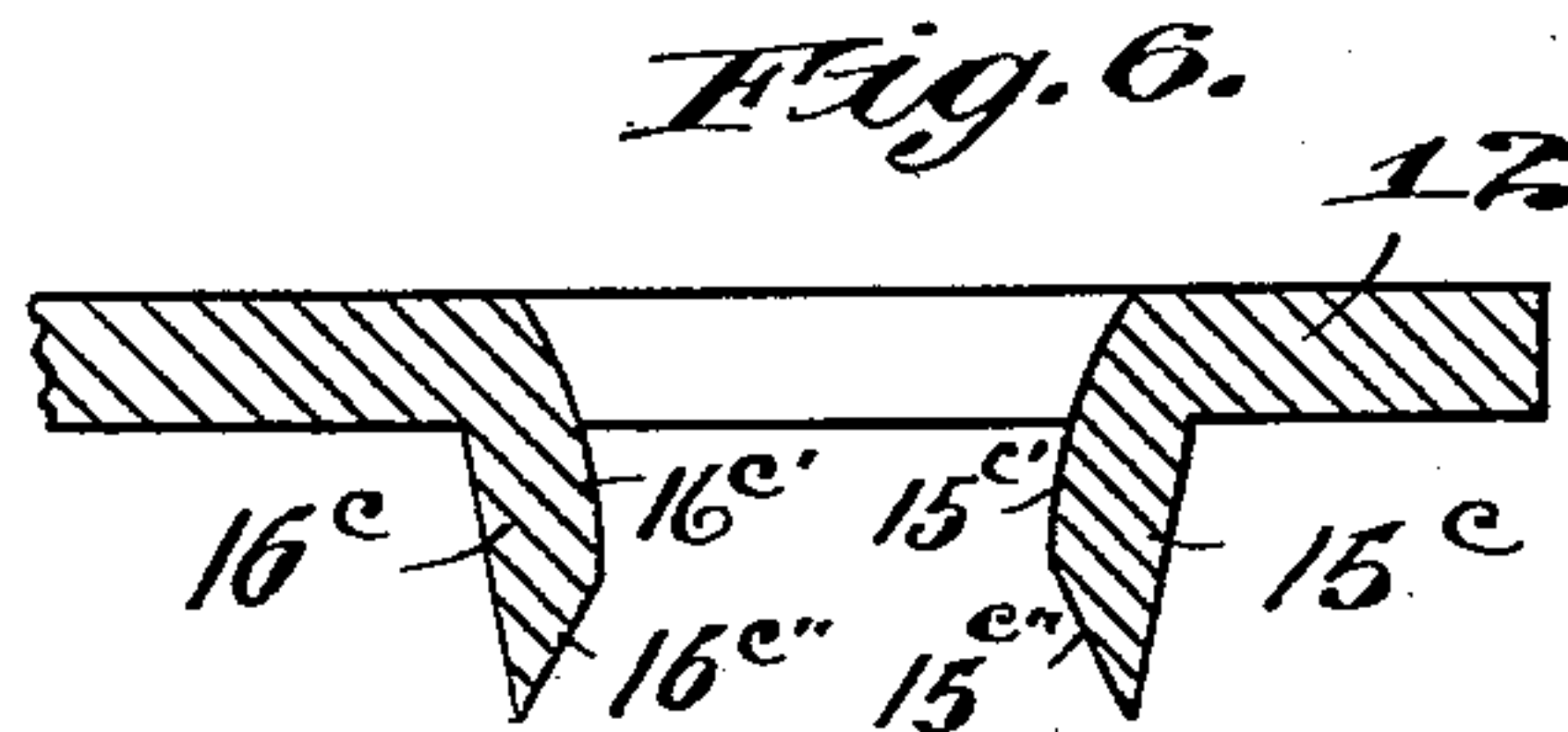
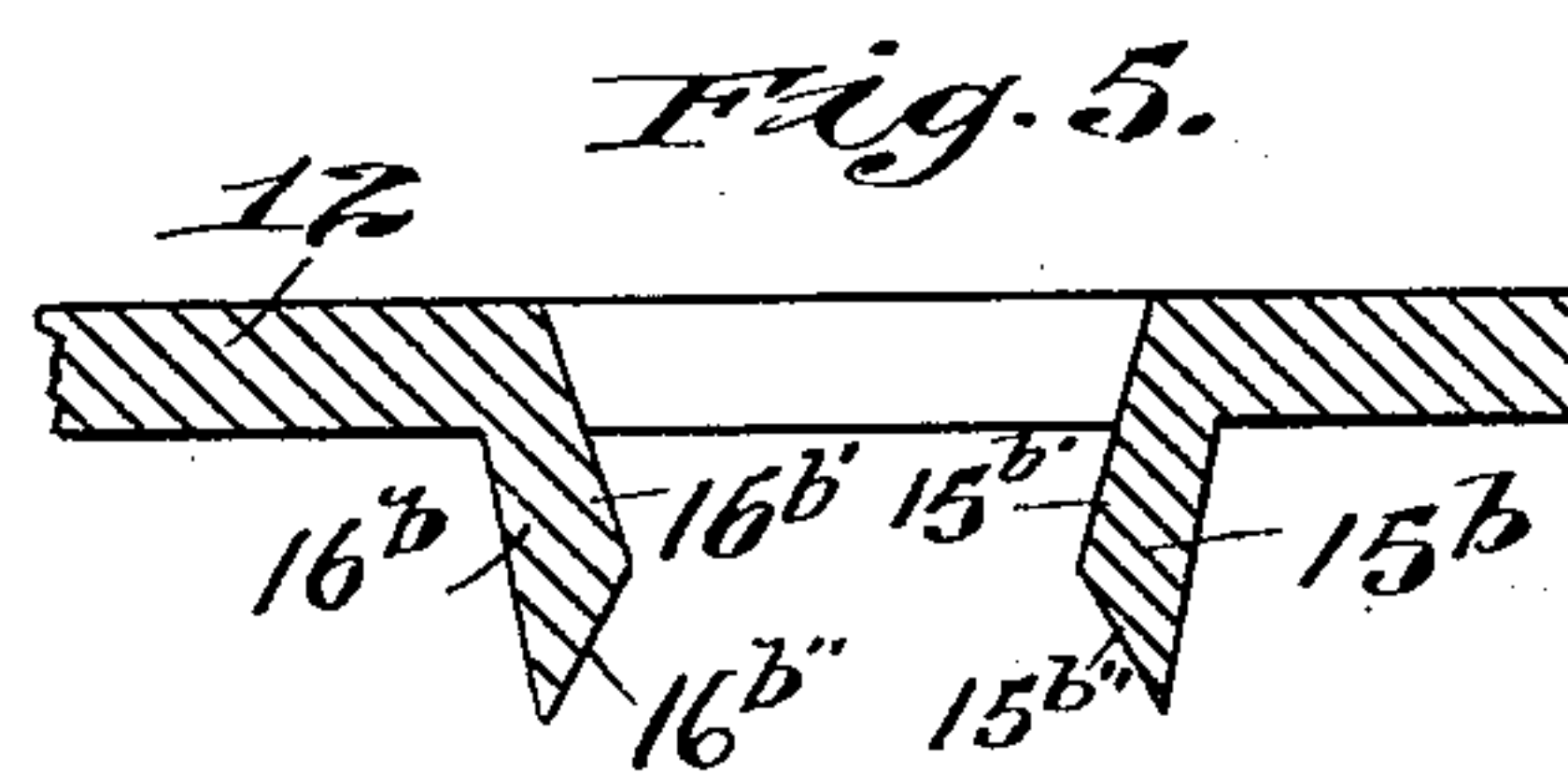
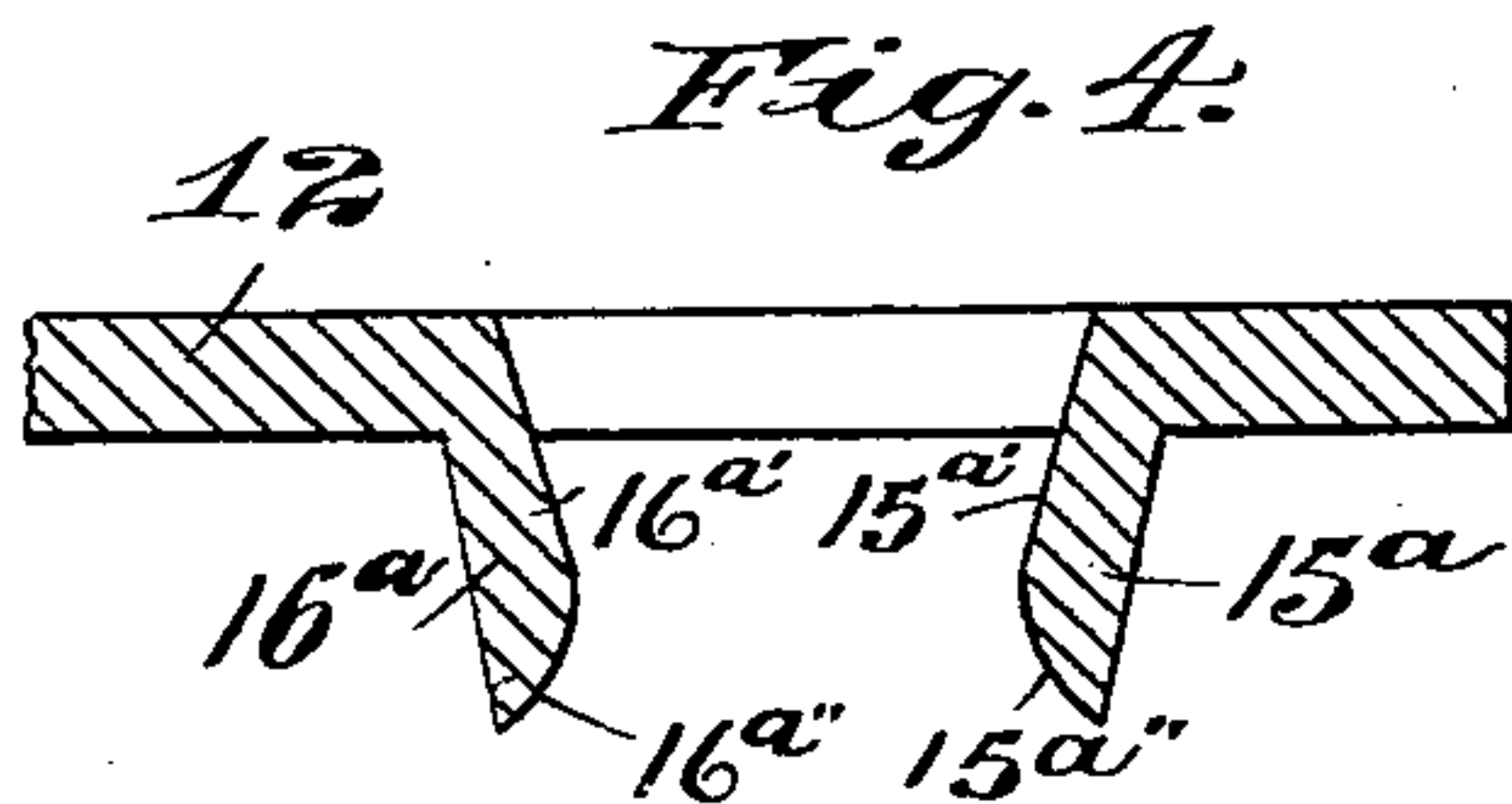
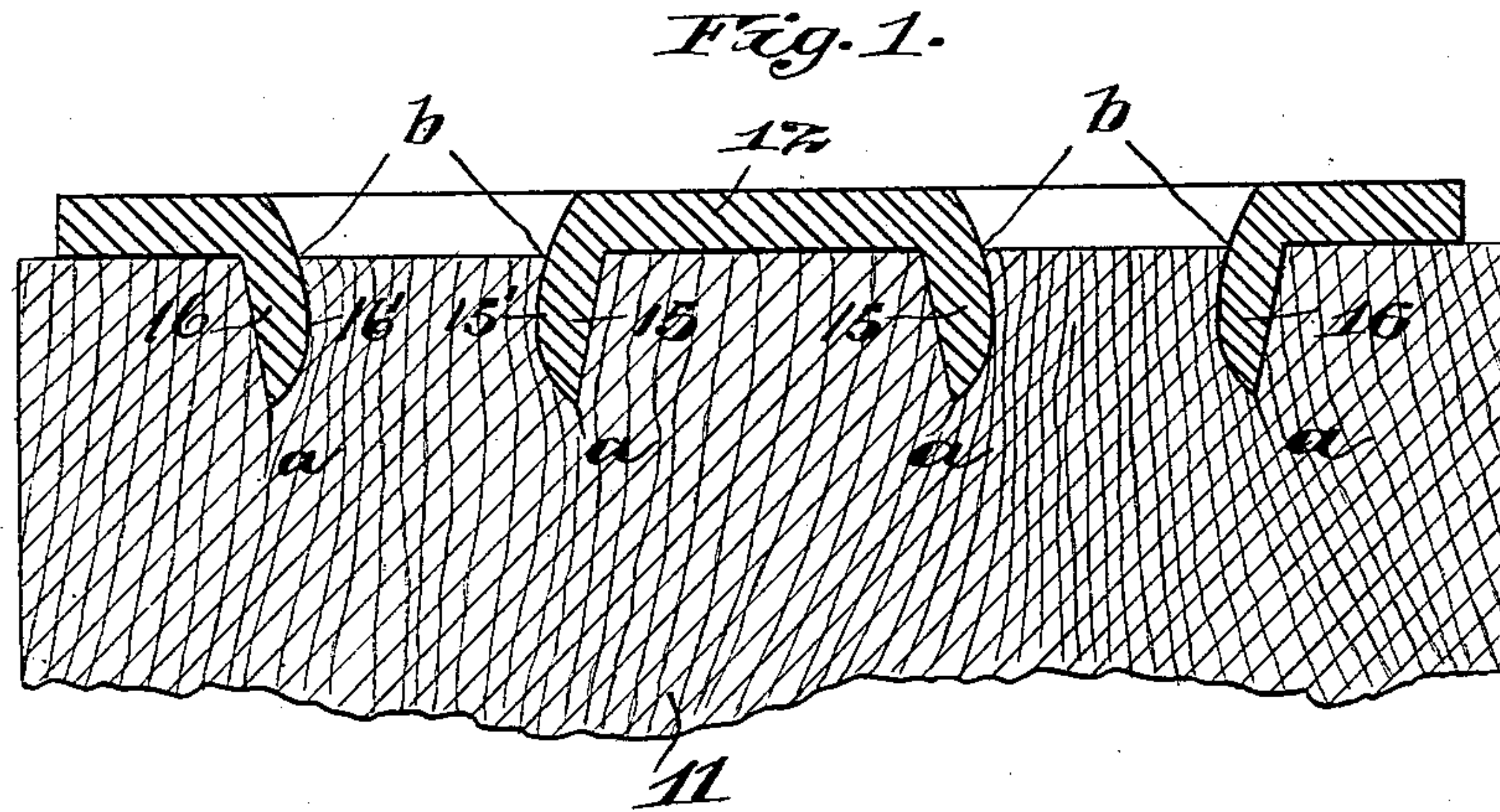
No. 751,201.

PATENTED FEB. 2, 1904.

E. F. PEIRCE.
RAILWAY TIE PLATE.
APPLICATION FILED NOV. 30, 1903.

NO MODEL.

2 SHEETS—SHEET 1.



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2 SHEETS—SHEET 2.

Fig. 2.

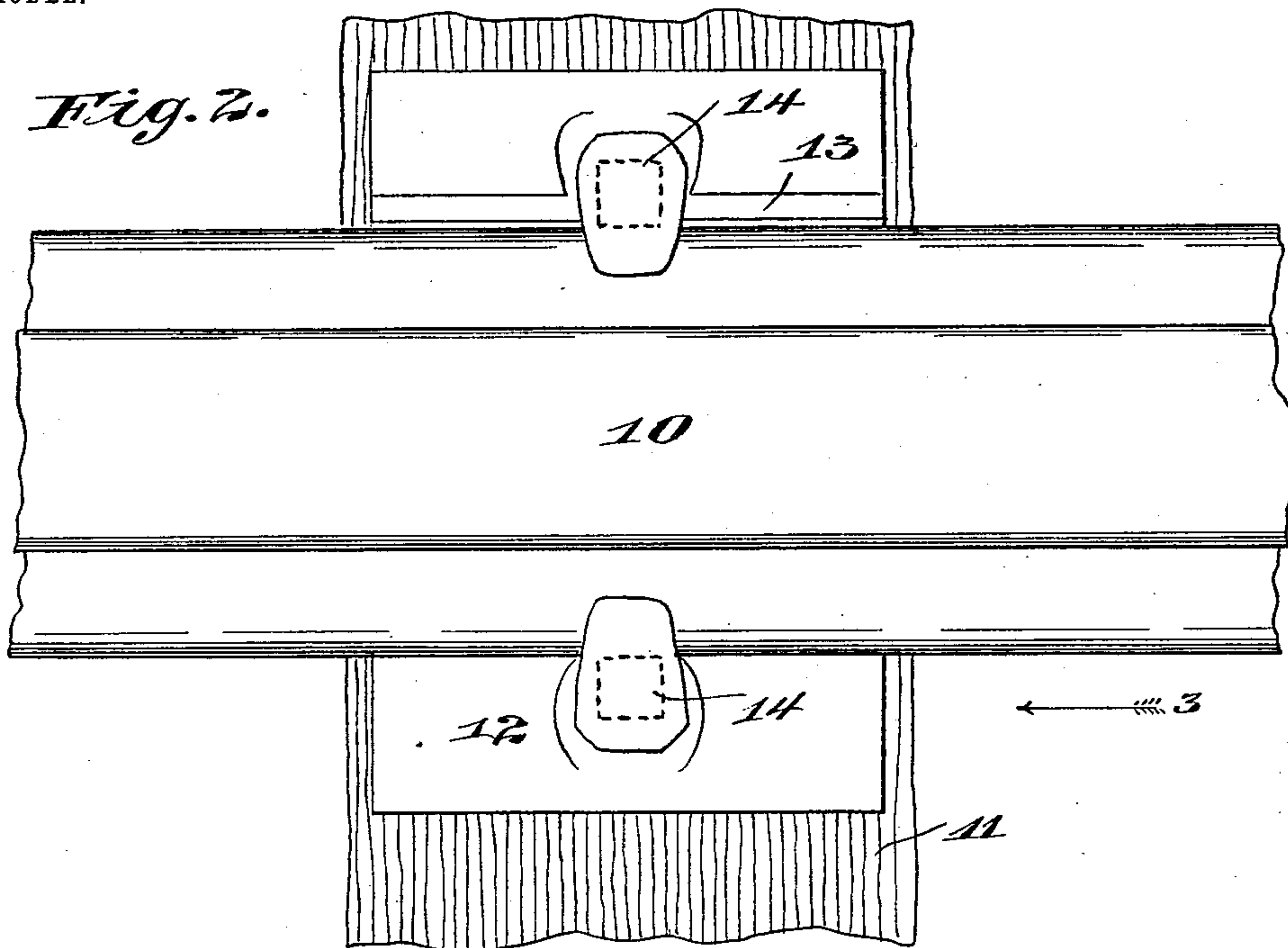
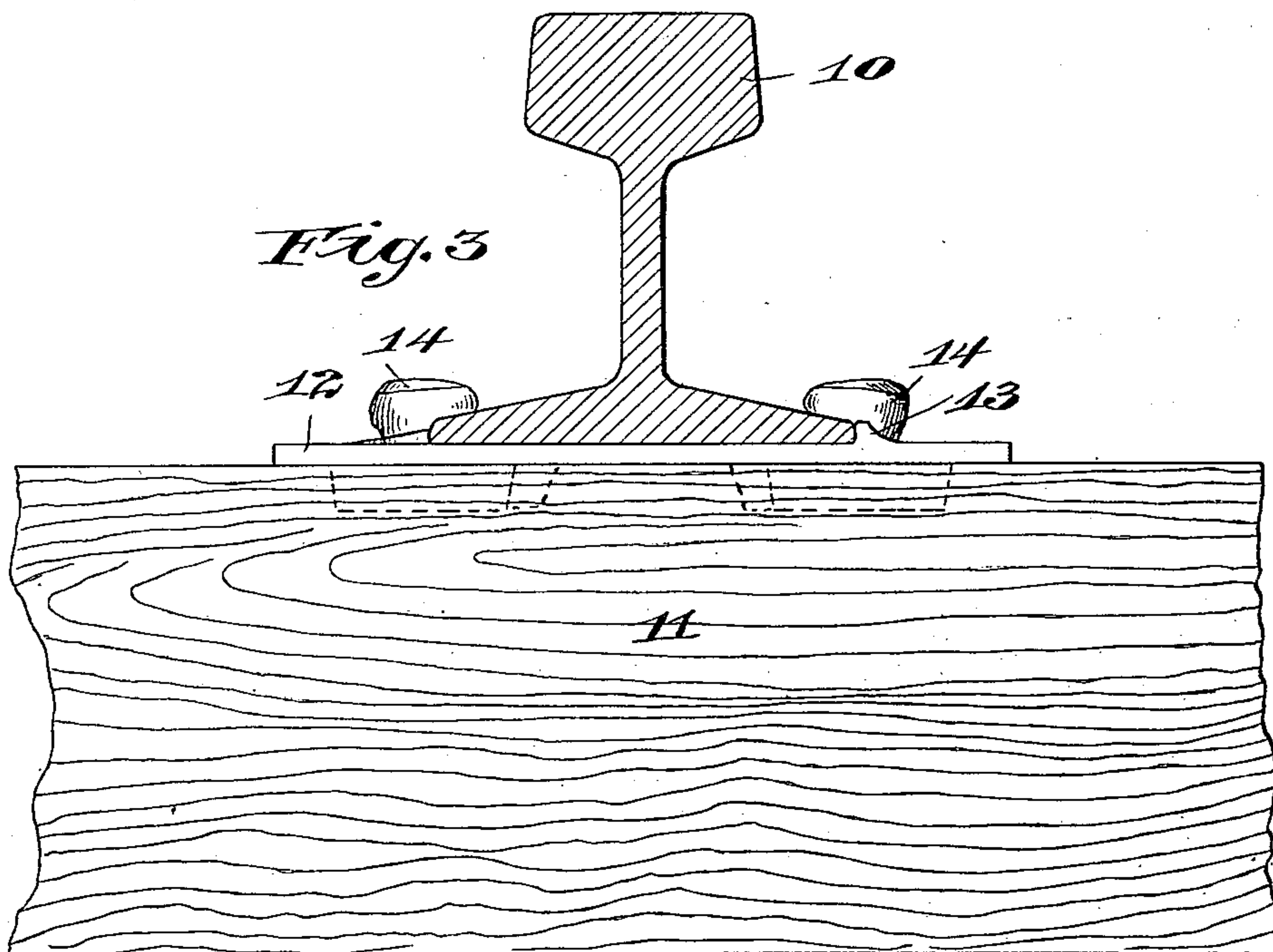


Fig. 3



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UNITED STATES PATENT OFFICE.

ERNEST F. PEIRCE, OF BEAVERDAM, WISCONSIN, ASSIGNOR TO BEAVERDAM MALLEABLE IRON COMPANY, OF BEAVERDAM, WISCONSIN, A CORPORATION OF WISCONSIN.

RAILWAY-TIE PLATE.

SPECIFICATION forming part of Letters Patent No. 751,201, dated February 2, 1904.

Application filed November 30, 1903. Serial No. 183,178. (No model.)

To all whom it may concern:

Be it known that I, ERNEST F. PEIRCE, a citizen of the United States, residing at Beaverdam, in the county of Dodge and State of Wisconsin, have invented certain new and useful Improvements in Railway-Tie Plates, of which the following is a specification.

My invention relates to railway-tie plates, and more particularly to that class of tie plates or chairs wherein a flat rail-engaging plate is provided on its under side with depending ribs so disposed thereon as to lie longitudinally of the tie when the plate is in service position, penetrating the fiber of the tie and serving to prevent creeping of the plate beneath the rail. Railway-tie plates of this general type have gone into extensive use and have given generally good results in saving the tie from cutting and wear occasioned by direct contact with the base-flange of the rail and to a considerable extent increasing the durability and wearing quality of the tie. It has been found in some instances, however, that the tie-plate in spite of the ribs, prongs, and other similar projections by which it is anchored in the tie works loose and under the elasticity of the rail and an insufficiently-bal- lasted tie sometimes becomes partially or wholly withdrawn from direct contact with the upper face of the tie on which it is seated. To remedy this, it has been proposed to provide upwardly-pointed hooks or spear-pointed corrugations on the ribs and prongs with a view to securing a greater anchorage in the material of the tie; but even such devices have a comparatively weak grip upon the fiber of the tie and are by no means proof against displacement under the wear and strains of practical use.

It is the object of the present invention to provide a tie-plate which by virtue of its peculiar construction shall possess a secure anchorage in the body of the tie and an increased capacity as compared with tie-plates now known and in use to remain firmly seated upon the tie without at the same time involving the use of special securing means extrane-

ous to the tie-plate itself. This object I carry out through a peculiar construction of the depending ribs, which enter the face of the tie, whereby the fiber of the latter is compressed between the opposed surfaces of adjacent ribs on each side of the tie-plate as the latter is driven to its seat, and is subsequently allowed to expand between the upper portions of said surfaces, whereby the compressed and expanded fiber forms, in effect, an anchor coöperating with the ribs against the withdrawal or unseating of the plate.

The principle of my invention as embodied in a variety of particular forms all adapted to secure the results aimed at by the invention is illustrated in the accompanying drawings, wherein—

Figure 1 is a cross-sectional view of the preferred form of tie-plate and of the upper portion of the tie transversely of the latter, clearly illustrating the engagement of the depending ribs with the tie and their peculiar action upon the fiber of the latter. Fig. 2 is a top plan view illustrating the engagement of the tie-plate with the tie and rail. Fig. 3 is an end elevational view of Fig. 2 in the direction indicated by the arrow, the rail being shown in transverse section; and Figs. 4 to 9, inclusive, are detail cross-sectional views illustrating modifications in the form or contour of the inner opposed faces of the depending ribs of the tie-plate.

Referring to the drawings, 10 designates a fragment of a railway-rail, 11 a fragment of a wooden tie, and 12 designates as an entirety the flat plate or body portion of my improved tie-plate.

13 designates an upstanding rib on the upper surface of the plate 12, which is adapted to engage one margin of the base-flange of the rail, and 14 designates the usual spikes passing through holes in the plate and binding the base-flange of the rail to its seat on the tie-plate.

On the under surface of the plate 12 are formed one or more pairs of coöperating depending ribs which are so disposed as to lie

longitudinally of the tie when the plate is in service position. The two cooperating ribs of each pair in the several specific forms thereof herein illustrated all possess a generic structural peculiarity embodying the gist of the present invention, such peculiarity residing in the formation given to the inner opposing faces of the companion ribs whereby intermediate portions of such surfaces are closer together than are their lower edges or their upper portions where they merge with the plate. In Fig. 1 I have designated the companion inner and outer ribs of each pair by 15 and 16, respectively, wherein it will be noticed that the inner opposed faces (designated by 15' and 16') of the ribs are convexed continuously between their lower edges *a* and their lines of junction with the body of the plate, (designated by *b*,) whereby the distance between the intermediate portions of said surfaces is considerably less than the distance between their edges *a* or their upper portions *b*. It follows as a result of this construction that as the plate is driven into the tie the ribs 15 and 16 of each pair in penetrating the fiber tend to at first compress the latter between said ribs, which compressed fiber subsequently expands between substantially the upper half of said ribs, thereby forming in the fiber of the tie itself a substantially wedge-like anchor, the normal tendency of which is to resist any tendency of the tie-plate to rise and by virtue of such elasticity as the fiber may possess holds the tie-plate in snug contact with the surface of the tie.

Fig. 4 shows a modification wherein the inner opposed faces of the ribs 15^a and 16^a are made up of upper flat downwardly-convergent surfaces 15^{a'} and 16^{a'} and lower convex downwardly-divergent surfaces 15^{a''} and 16^{a''}.

Fig. 5 shows a modification wherein the inner opposed faces of the ribs 15^b and 16^b are made up of upper flat downwardly-convergent surfaces 15^{b'} and 16^{b'} and lower flat downwardly-divergent surfaces 15^{b''} and 16^{b''}.

Fig. 6 shows a modification wherein the inner opposed faces of the ribs 15^c and 16^c are made up of upper convex downwardly-convergent surfaces 15^{c'} and 16^{c'} and lower flat downwardly-divergent surfaces 15^{c''} and 16^{c''}.

Fig. 7 shows a modification wherein the inner opposed faces of the ribs 15^d and 16^d are made up of upper concave downwardly-convergent surfaces 15^{d'} and 16^{d'} and lower concave downwardly-divergent surfaces 15^{d''} and 16^{d''}.

Fig. 8 shows a modification wherein the inner opposed faces of the ribs 15^e and 16^e are made up of upper flat downwardly-convergent surfaces 15^{e'} and 16^{e'} and lower concave downwardly-divergent surfaces 15^{e''} and 16^{e''}.

Fig. 9 shows a modification wherein the inner opposed faces of the ribs 15^f and 16^f are made up of upper concave downwardly-convergent surfaces 15^{f'} and 16^{f'} and lower flat downwardly-divergent surfaces 15^{f''} and 16^{f''}.

In all of the various forms of the invention hereinabove described the upper downwardly-convergent surfaces preferably occupy substantially one half of the depth of the ribs and the lower downwardly-divergent surfaces the other half.

From the foregoing it will be readily understood that the principle of the invention is capable of embodiment in a considerable variety of specific forms imparted to the inner opposed faces of the companion ribs of each pair, not all of which are attempted to be herein shown and described; but it will be noted as a generic characteristic of all these forms that substantially the upper halves of the inner faces of the ribs are downwardly convergent, while substantially their lower halves are downwardly divergent, whereby as the plate is driven to its seat the fiber comprehended between the lower edges of the ribs as the latter enter the tie is at first compressed and subsequently allowed to expand to fill the wider space existing between the upper halves of the faces. Such a construction differs both in principle and results obtained from a construction employing hooks or barbs on the sides of the ribs in that the holding effect in the present case is secured by the cooperative action of a pair of ribs on an expanded body of fiber lying between them, while in the case of hooked or barbed ribs such anchoring effect as is secured is obtained by the separate and independent action of each rib irrespective of the others. Furthermore, by reason of the continuous and uninterrupted contact of the holding-faces of the ribs with the fiber the latter hugs said faces snugly and uniformly throughout the entire extent of contact.

In the plate herein shown that portion of the plate 12 lying between companion ribs is open, which affords a convenience in the operation of molding the plates; but it will be understood that this feature is immaterial, and the plate might be integral throughout its entire extent without departing from the invention.

I claim—

1. A tie-plate provided with one or more pairs of depending ribs adapted to enter the material of the tie, the inner opposed faces of each pair of ribs being closer together at their intermediate portions than at their upper and lower ends, substantially as described.

2. A tie-plate provided with one or more pairs of depending ribs adapted to enter the material of the tie, the inner opposed faces of each pair of ribs having downwardly-convergent upper portions and downwardly-divergent lower portions, substantially as described.

3. A tie-plate provided with one or more pairs of depending ribs adapted to enter the material of the tie, the upper halves of the inner opposed faces of each pair of ribs being downwardly convergent and their lower halves

downwardly divergent, substantially as described.

4. A tie-plate provided with one or more pairs of depending ribs adapted to enter the material of the tie, the inner opposed faces of each pair of ribs being convex throughout and downwardly convergent through substantially

the upper halves of said faces and downwardly divergent through substantially the lower halves thereof, substantially as described.

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