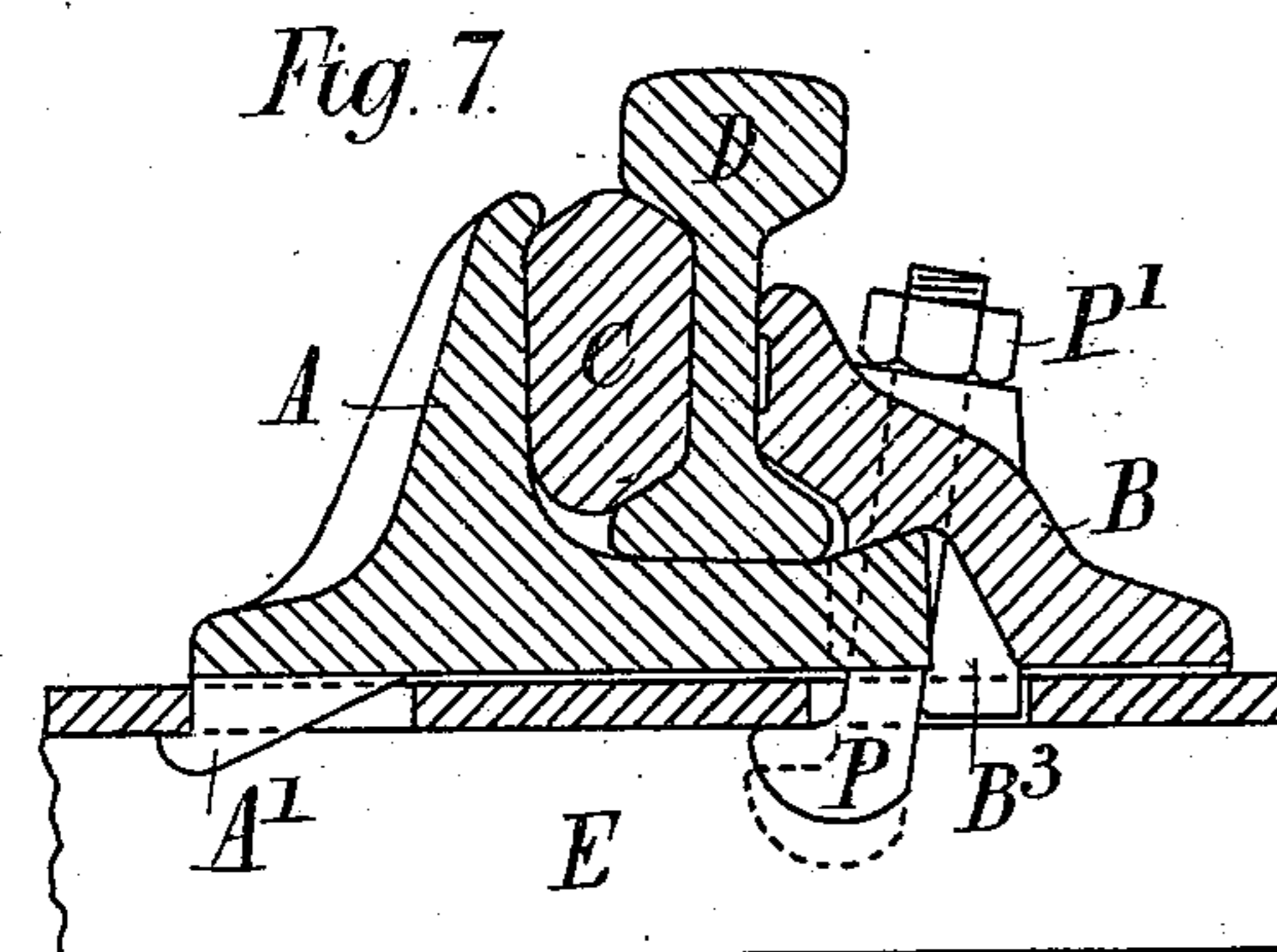
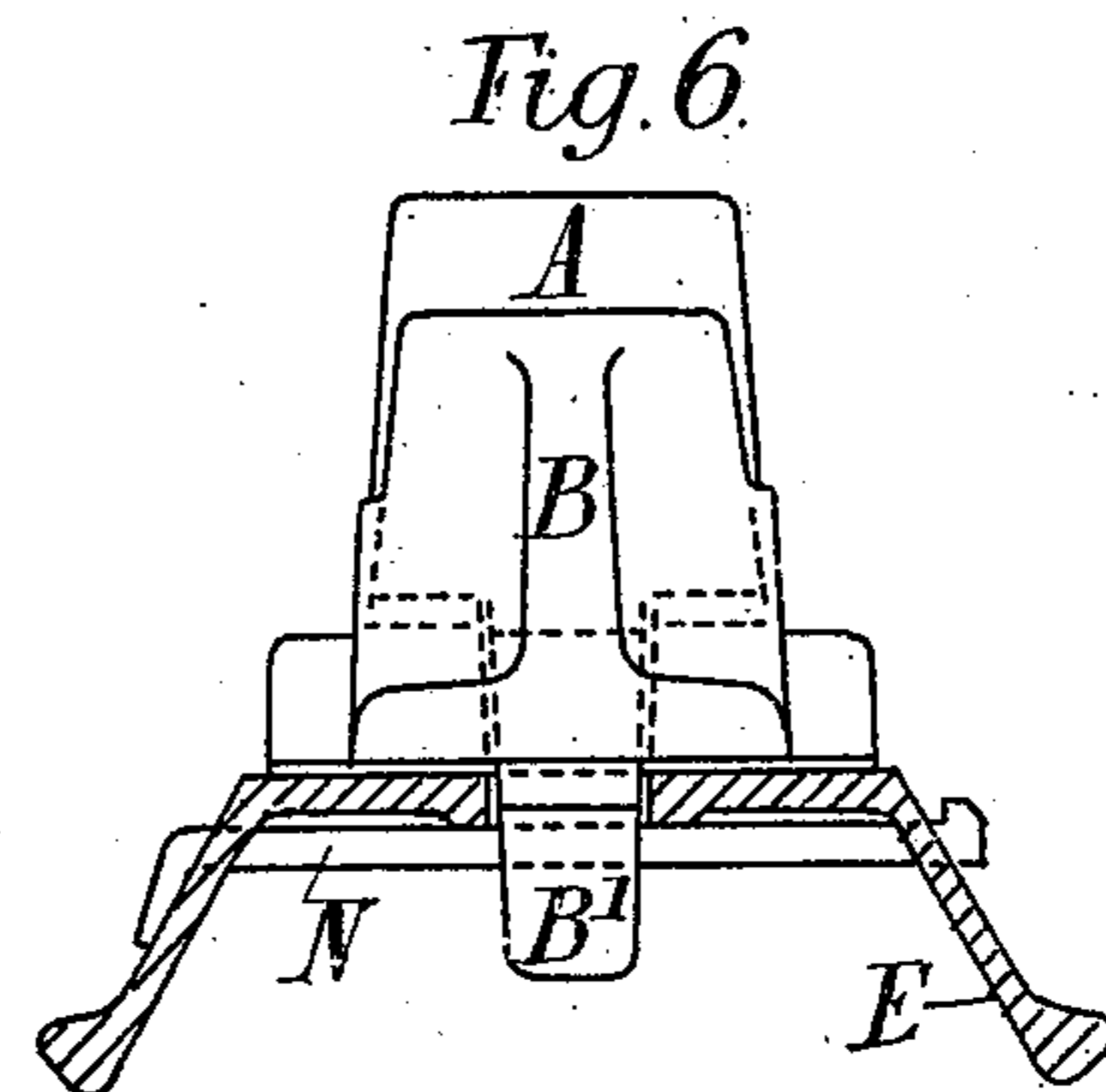
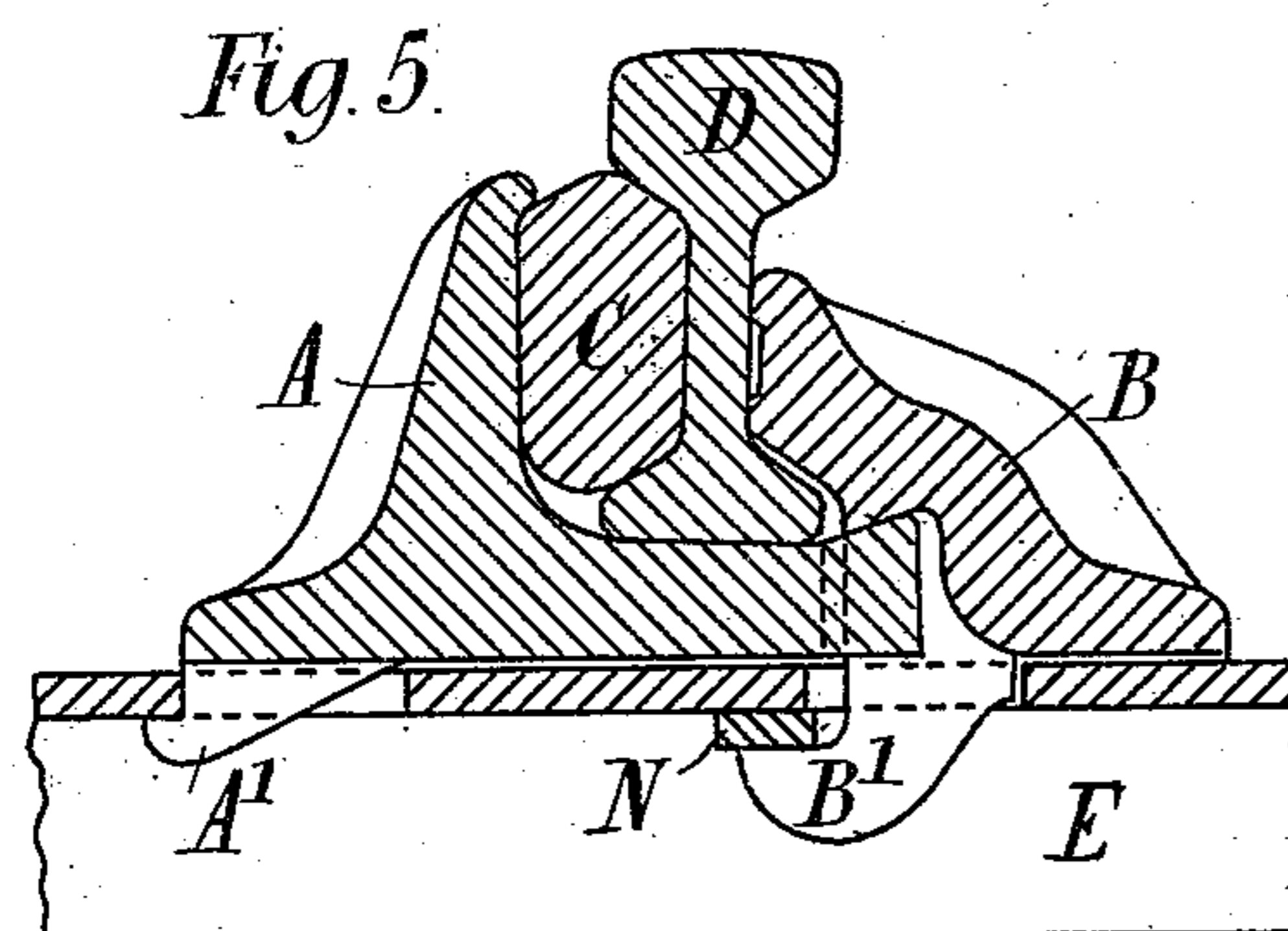
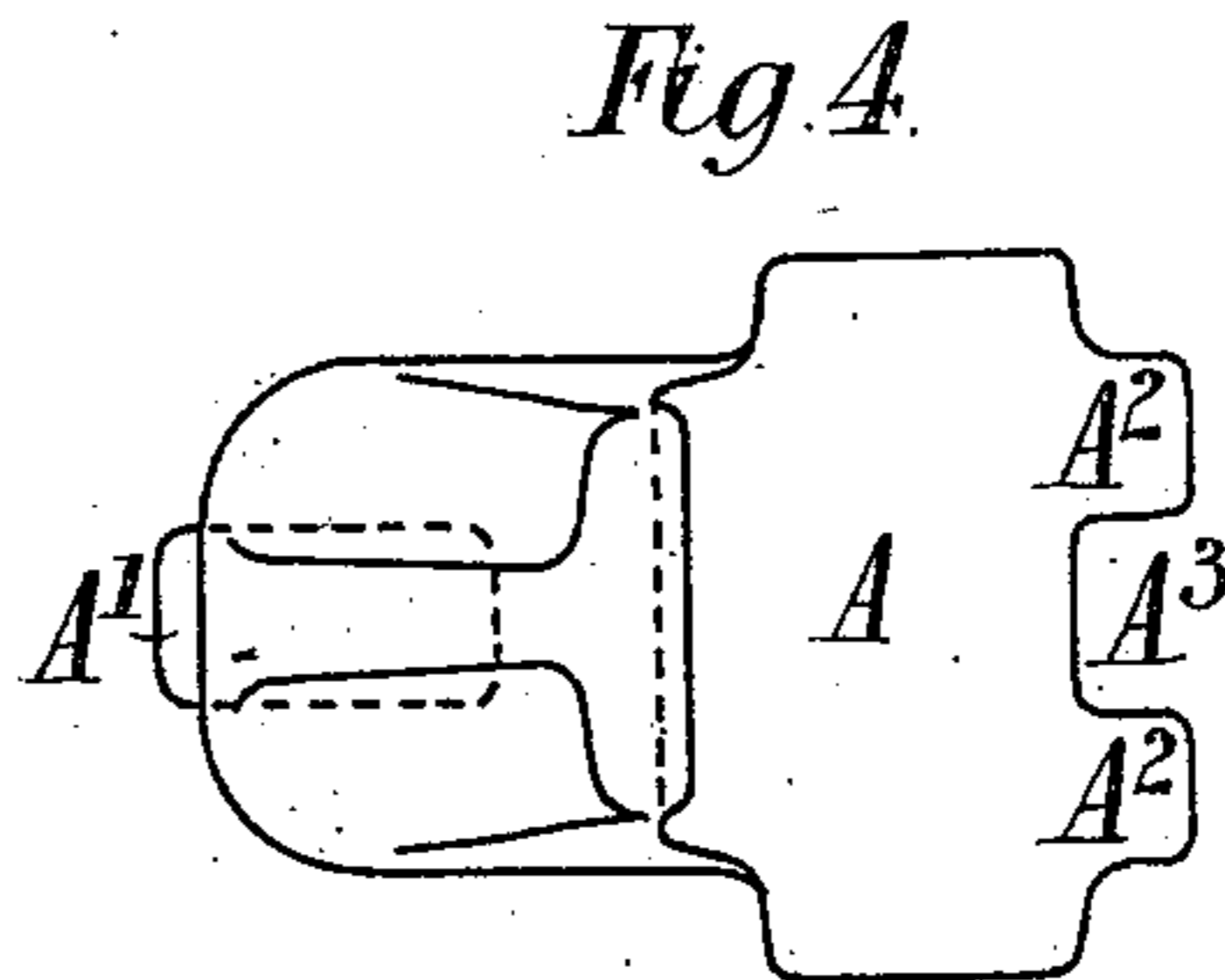
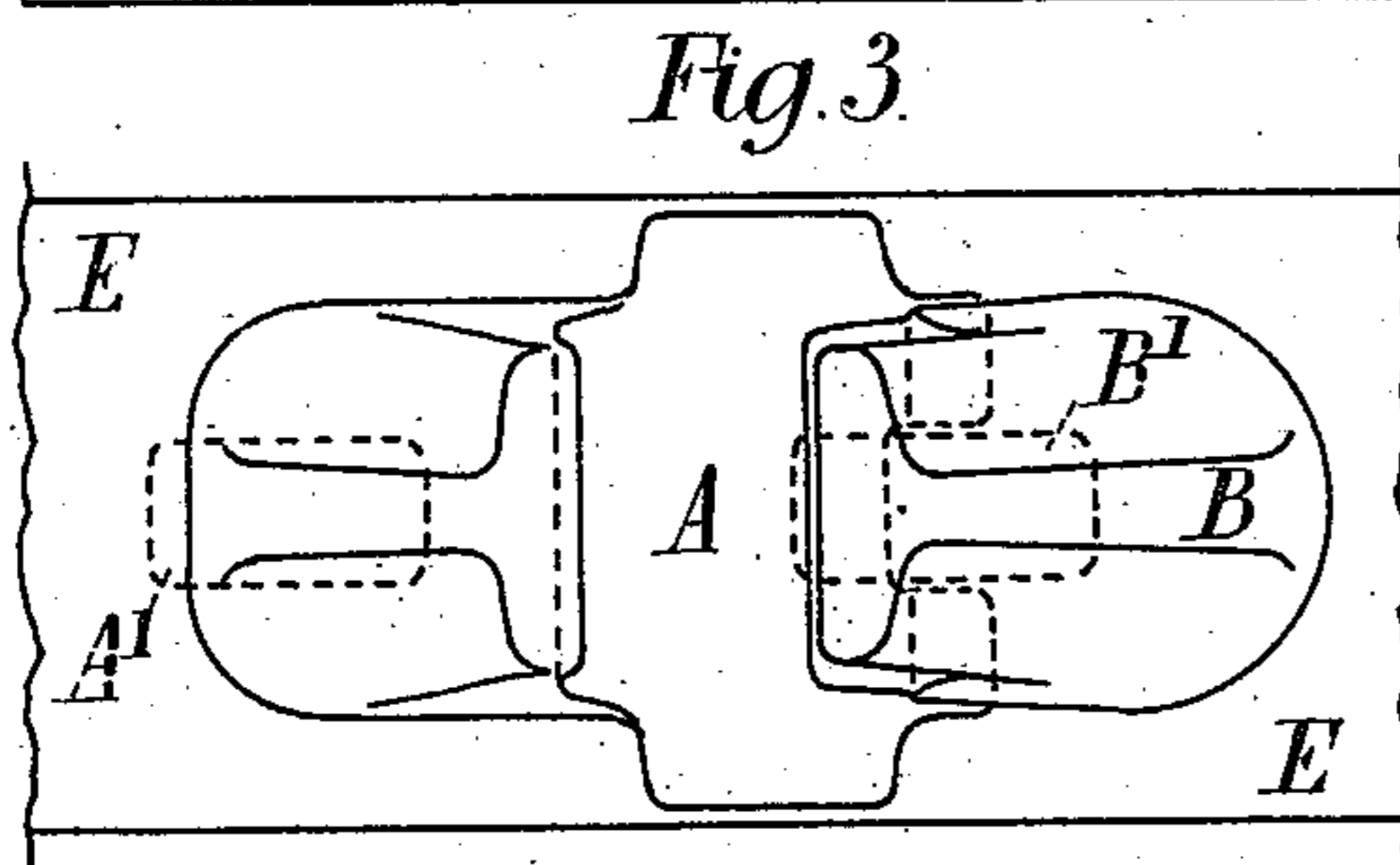
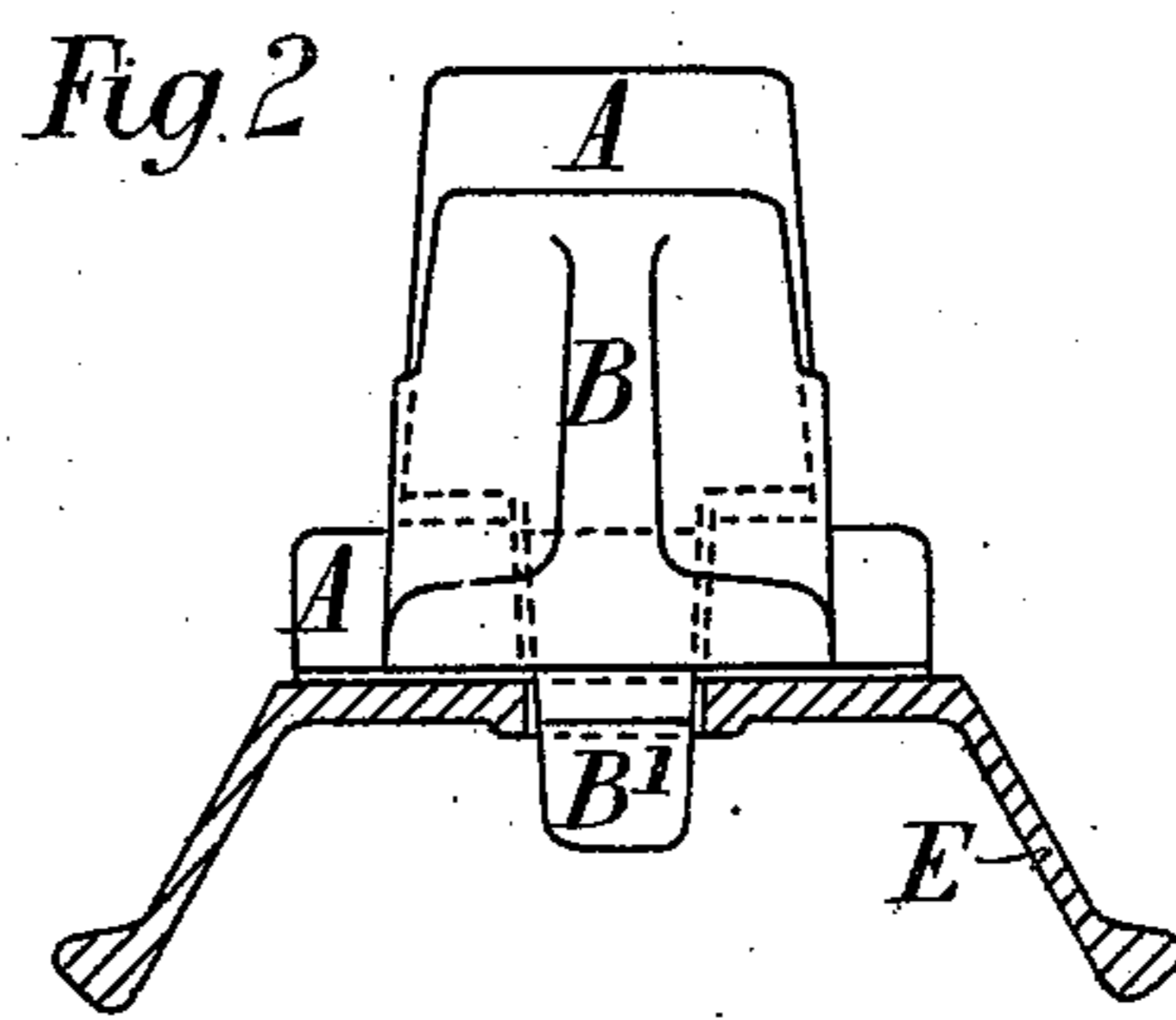
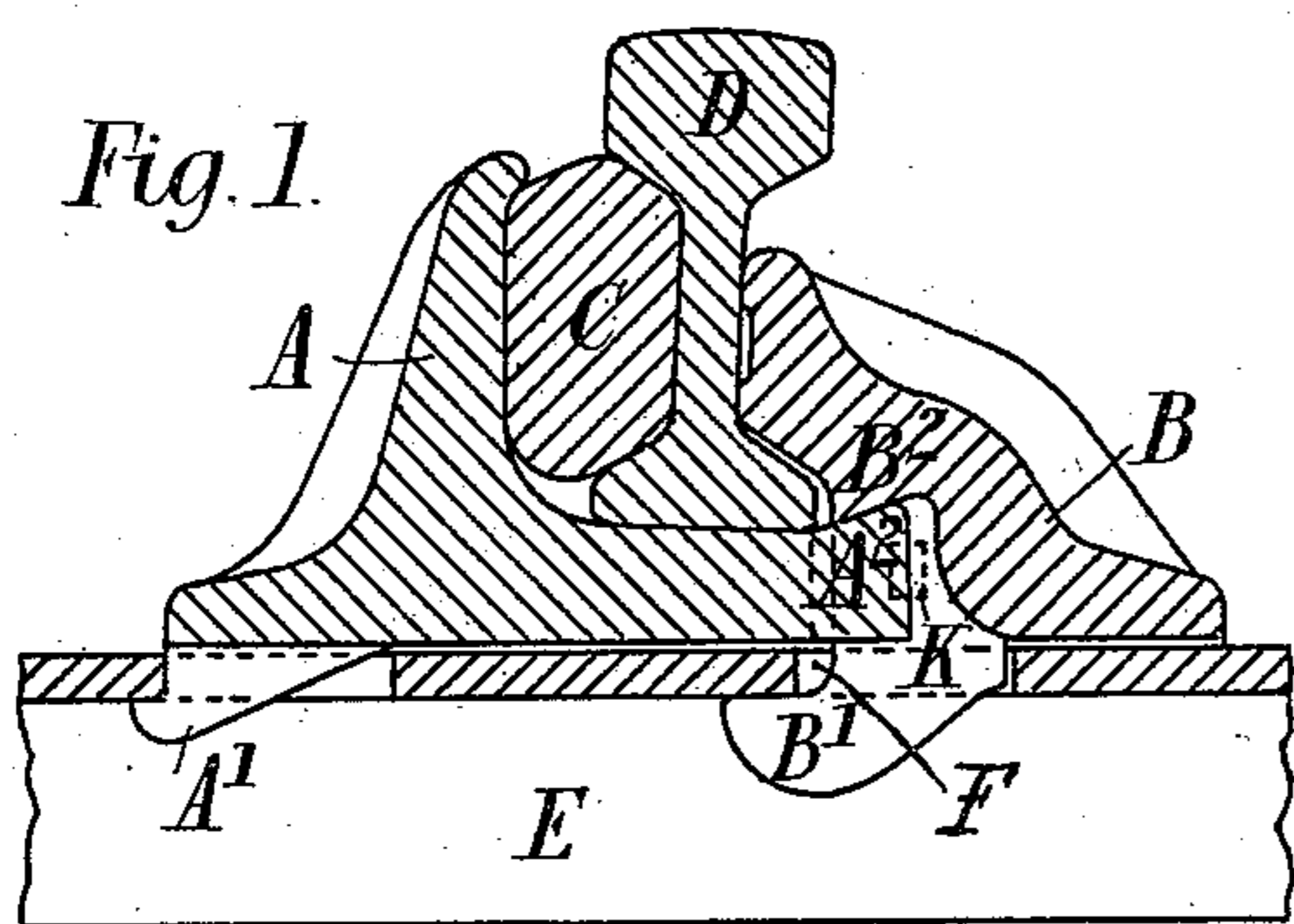


(No Model.)

J. WHITESTONE.  
SECURING RAILS TO METALLIC TIES.

No. 556,118.

Patented Mar. 10, 1896.



Witnesses.

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# UNITED STATES PATENT OFFICE.

JAMES WHITESTONE, OF LONDON, ENGLAND.

## SECURING RAILS TO METALLIC TIES.

SPECIFICATION forming part of Letters Patent No. 556,118, dated March 10, 1896.

Application filed October 21, 1895. Serial No. 566,373. (No model.) Patented in England September 6, 1894, No. 16,983, and April 5, 1895, No. 7,017.

*To all whom it may concern:*

Be it known that I, JAMES WHITESTONE, a subject of the Queen of Great Britain, residing at London, England, have invented new and useful Improvements in Securing Rails to Metallic Ties, (for parts of which I have obtained patents in Great Britain, No. 16,983, dated September 6, 1894, and No. 7,017, dated April 5, 1895, respectively,) of which the following is a specification.

My invention relates to improved means for fastening and securing rails to metallic ties; and it consists in using for each attachment two brackets, one being on each side of the rail and having inclined flat meeting surfaces and lugs or hooks engaging the tie, which brackets together form virtually a chair upon and within which the rail rests, and is secured by a key, which also in forcing the brackets apart causes the inclined surfaces to react against each other and thereby clamp and tighten the brackets and the tie together immediately below the seating of the rail.

In the following description it is to be understood that the words "inner" and "inward" refer to parts and positions relatively nearer to the center line of a railway-track of two parallel or concentric rails and that the words "outer" and "outward" refer to parts and positions relatively farther from such center line.

In the drawings annexed hereto like letters of reference indicate similar parts in the several views.

Figure 1 is a longitudinal section, and Fig. 2 is a cross-section, through the tie, showing the brackets in position. Fig. 3 is a plan of the two brackets and part of the tie, and Fig. 4 is a plan of the outer bracket alone. Fig. 5 is a longitudinal section, and Fig. 6 is a cross-section, through the tie, showing, in addition to the parts shown in Fig. 1, a parallel key or packing-bar to facilitate the removal of the parts; and Fig. 7 is a longitudinal section showing a hooked bolt for the same purpose.

Referring to Figs. 1, 2, 3, and 4, the outer bracket, A, has its upper surface formed to support the foot of the rail D and extends or projects upward on the outer side thereof so as to form an abutment for the key C when

the latter is driven in between it and the rail. This bracket has at its outer end and about the center of its width a hook or lug A', projecting downward from its under side, which hook passes through a hole or slot (by preference rectangular or thereabout) made in the upper part of the tie E, and extends outward thereunder and is formed with a vertical surface to bear against the outer end of the hole or slot. The inner end of this bracket extends inward beyond the rail and has its upper surface at A<sup>2</sup> inclined upward and inward to receive and bear against the under side of the inner bracket, and a notch or gap A<sup>3</sup>, Fig. 4, is made about the center of its width to allow space for the reception of the hook or lug B' of the inner bracket, B, next described.

The inner bracket, B, extends or projects upward on the inner side of the rail, so as to form an abutment for the web of the rail and resist the pressure caused by the key C acting upon the opposite or outer side of the rail. This inner bracket has at its outer end and about the center of its width a hook or lug B' projecting downward from its under side, which hook passes within the notch or gap in the outer bracket and through a hole or slot (by preference rectangular or thereabout) made in the upper part of the tie E, and extends outward thereunder. Part of this inner bracket projects over and bears upon the inclined upper surface of the outer bracket above described and has its under side formed with a plane surface B<sup>2</sup> inclined downward and outward to fit the same, for the purpose hereinafter set forth.

That part of the hook or lug B' of the inner bracket which, when the several parts are in their proper positions, is situated between the levels of the upper and lower surfaces of the tie through which it passes is formed at its inner end with a vertical surface to bear against the inner end of the hole or slot.

When the several parts (that is to say, the tie E, the two brackets A and B, the rail D, and the key C) are in their proper positions and when the key is driven in tightly, its pressure tends to separate and drive apart the two brackets, and the mutual reaction of the inclined surfaces A<sup>2</sup> and B<sup>2</sup> then causes the inner end of the outer bracket to be forced

downward, (since the projection of the hook B' beneath the tie prevents the inner bracket from rising,) and consequently the upper part of the tie is firmly gripped between the hook or lug B' and the under side of the outer bracket, A, while at the same time the rail is secured tightly between the two brackets.

In order to insure the action of the parts as last described, I prefer to allow a small clearance between the inner end of the inner slot in the tie and the lug B', as shown at F, Fig. 1.

If it be required that the two brackets shall be rigidly fixed in position and locked without the pressure of the key C or its equivalent, I use a tapered metallic key sliding in a suitable tapered keyway formed in the innermost projecting parts of the outer bracket and passing through a suitable slot or hole in the middle or hooked part of the inner bracket, so that by driving in such key the two brackets may be pressed in opposite directions and the inclined surfaces A<sup>2</sup> and B<sup>2</sup> forced tightly together. Such a key is indicated by dotted lines at K, Fig. 1.

In some cases, especially where trains pass very frequently, it may be necessary to remove and replace one tie without disturbing adjacent rail connections, and where this is required I increase the projection of the hook or lug of the inner bracket, so as to allow a space between it and the under side of the tie sufficient to admit a parallel metallic key or packing-bar N, Figs. 5 and 6, which passes through holes in the sides of the tie and is of about the same thickness as the tie. The several parts are tightened and secured by the action of the key C, as above described.

In removing the parts without disturbing adjacent attachments the keys C and N are withdrawn, and the inner bracket, B, can then be lifted and removed. The outer bracket, A, is then pushed inward until its hook A' is clear of the under side of the tie, when this bracket also can be lifted and removed. The several parts may be replaced in the inverse order of their removal. For the sake of additional security I prefer to bend or clinch the end of the key N when in position, as shown in Fig. 6, and in this case it must be straightened or cut before it can be withdrawn.

In Fig. 7 is shown another variation for the purpose of facilitating the removal of the parts. The hooked portion of the lug of the inner bracket is omitted, only the part marked B<sup>3</sup> being retained, and a hooked screw-bolt P passing through a hole in the inner bracket is used to prevent the latter from rising. The lower part of the shank of this bolt is square and engages the flat outer end of the lug B<sup>3</sup>. When the several parts are in their proper positions, as shown in the drawings, and the key C is driven in tightly the upper part of the tie is firmly gripped between the hook of the bolt P and the under side of the outer bracket.

In removing the parts without disturbing adjacent attachments the key C is withdrawn and the nut P' is loosened and turned until the hook of the bolt P is lowered into the position shown by dotted lines, when it, together with the inner bracket, can be lifted out, and then the outer bracket can be removed, as before described. The several parts may be replaced in the inverse order of their removal.

Instead of one hook or lug either or both of the brackets may have two hooks or lugs passing through corresponding holes or slots in the tie.

By preference a pad of felt is interposed between the tie and the brackets.

In the above description and the drawings herewith the application of my invention to rolled transverse ties has been particularly set forth, but rail-supports of any other suitable form and material may be used.

The key C is preferably of hard wood, but may be of coiled steel or other form and material suitable for the climate and other conditions of the location.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is—

1. In a rail-fastening the combination with the metallic tie, of the brackets provided with lugs for engaging the tie, on opposite sides of the rail, said brackets having inclined meeting surfaces, one of said brackets having portions extending beneath the foot of the rail, and the wedge for forcing said brackets apart and said inclined surfaces together, to clamp the rail and secure the brackets to the tie, substantially as described.

2. In a rail-fastening the combination with the metallic tie provided with securing-apertures on each side of the rail, of a bracket provided with a hook-shaped retaining-lug engaging one of said apertures and having a part for engaging the foot of the rail, said part having an inclined face, an opposing bracket having a part for engaging the rail and an inclined face for engaging the inclined face of the other bracket and having a hook-shaped lug engaging one of the apertures in said tie, and the key engaging said first-mentioned bracket and the rail for forcing said brackets transversely of the rail to force said inclined faces together and clamp the brackets to the tie, substantially as described.

3. In a rail-fastening the combination with the metallic tie, of a bracket having a retaining-lug for engaging the tie, and a part extending beneath the foot of the rail having an inclined face, the opposing bracket provided with a part to engage the rail, a retaining-lug for engaging the tie and a part provided with an inclined face engaging and lying above the inclined face of the other bracket, means for clamping the said opposing bracket to the tie, and a wedge for engaging said first-named bracket and the rail

for forcing said brackets transversely of the rail to clamp the rail and force said inclined faces together, substantially as described.

4. In a rail-fastening the combination with  
5 the metallic tie provided with securing-apertures, of a bracket provided with a retaining-lug engaging one of said apertures, and having a part engaging the tie and lying beneath the foot of the rail, said part having an inclined face, an opposing bracket having a  
10 part for engaging the rail, a hook-shaped retaining-lug for engaging one of said apertures and extending beneath the tie and a

part provided with an inclined face for engaging the inclined face of the other part, 15 the packing-bar engaging the said hook-shaped lug between it and the tie, and the key for engaging the first-named bracket and the rail for forcing said brackets transversely of the rail to force said inclined faces together and clamp the brackets to the tie, substantially as described. 20

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