

C. BLEICHER.

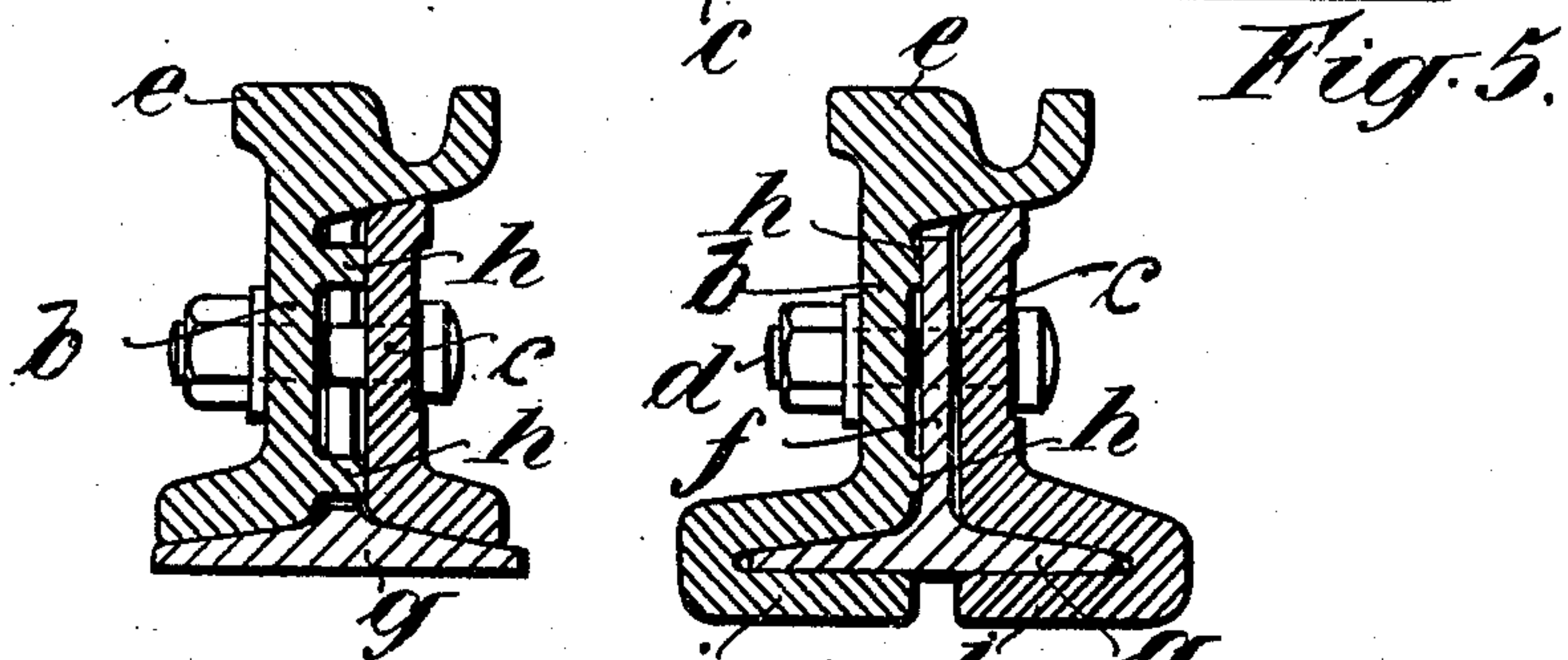
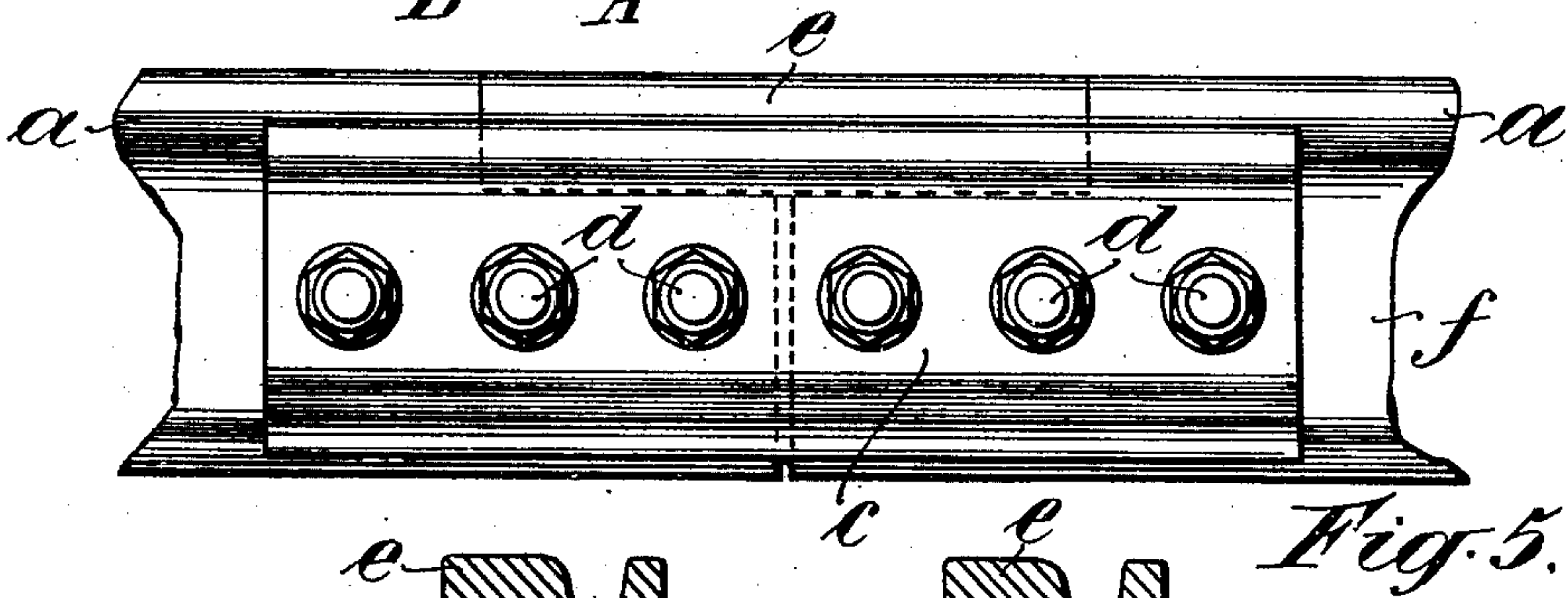
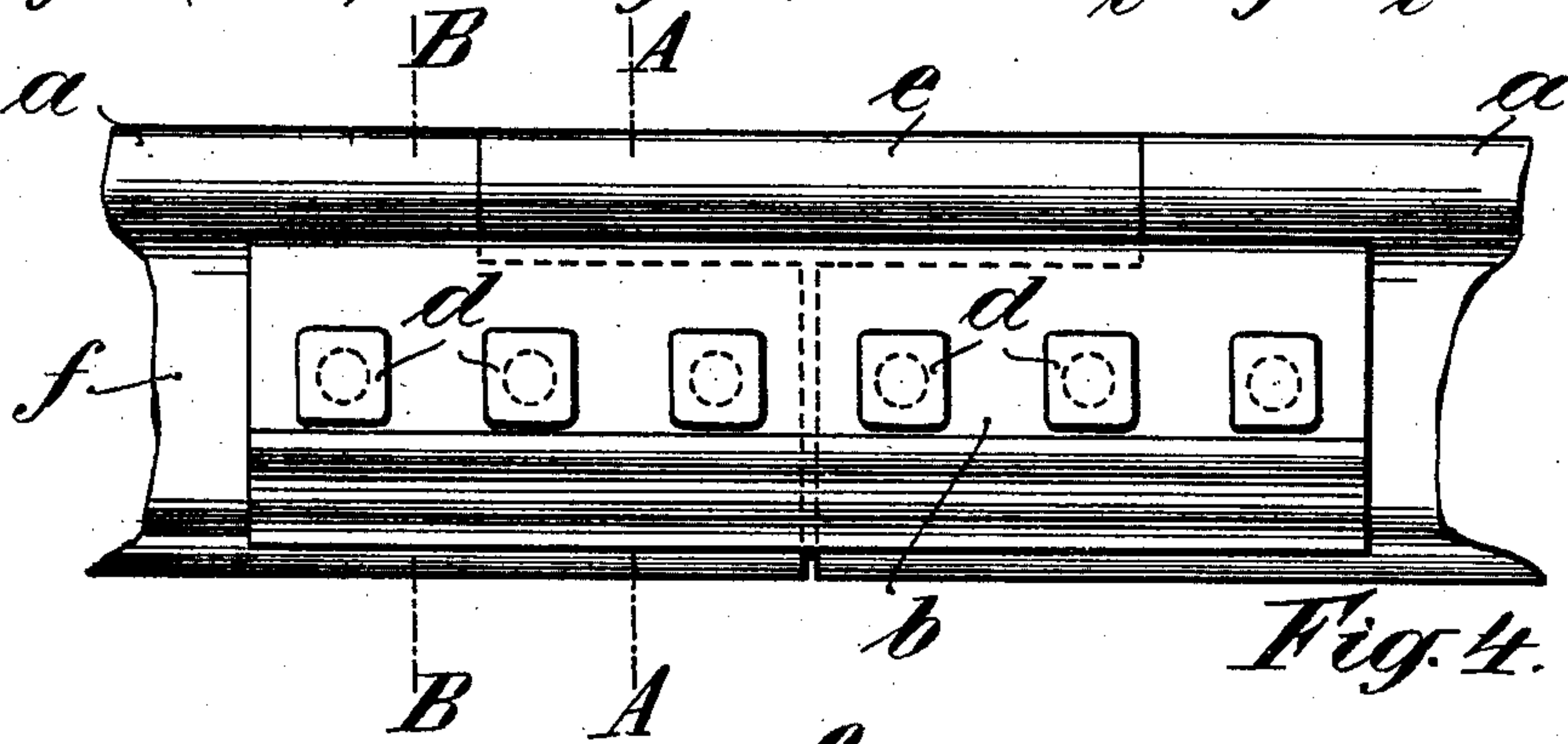
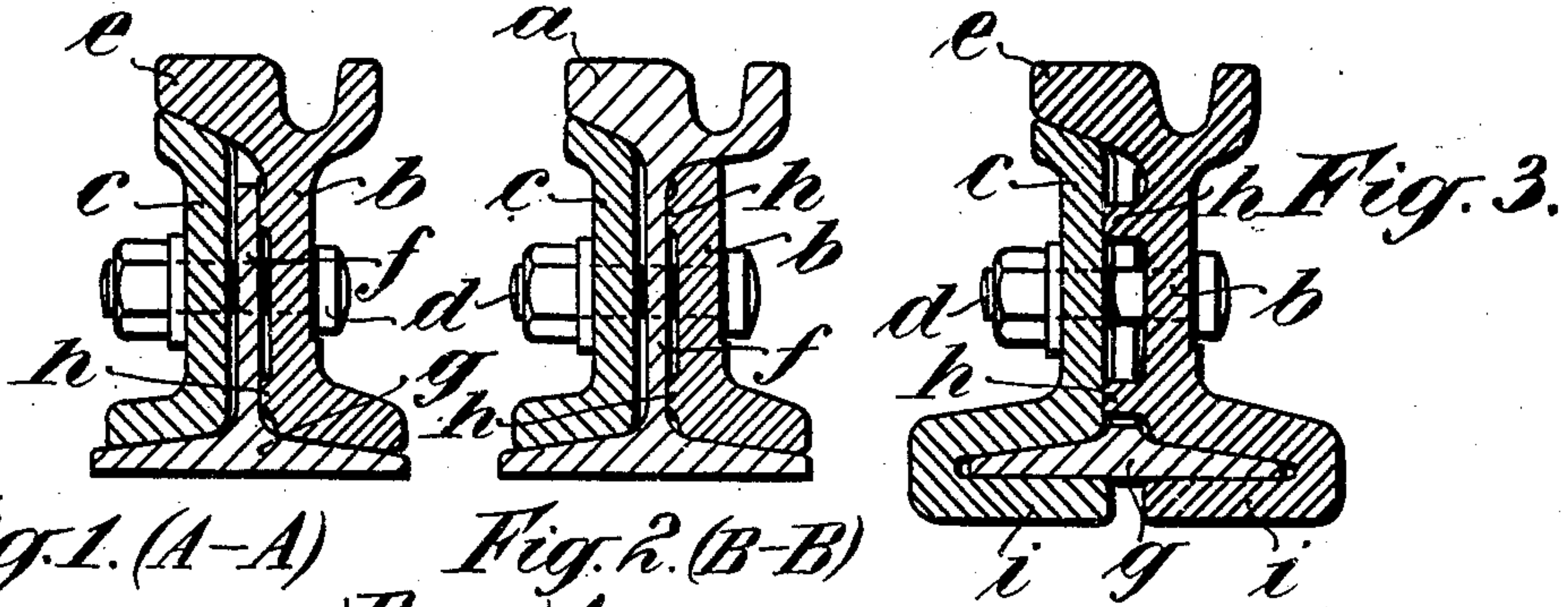
RAIL JOINT.

APPLICATION FILED APR. 29, 1907.

915,067.

Patented Mar. 16, 1909.

3 SHEETS—SHEET 1.



Witnesses: *Fig. 6.*
O. F. Nagle.
Harry C. Dalton.

By *Fig. 7.* Inventor:
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3 SHEETS—SHEET 2.

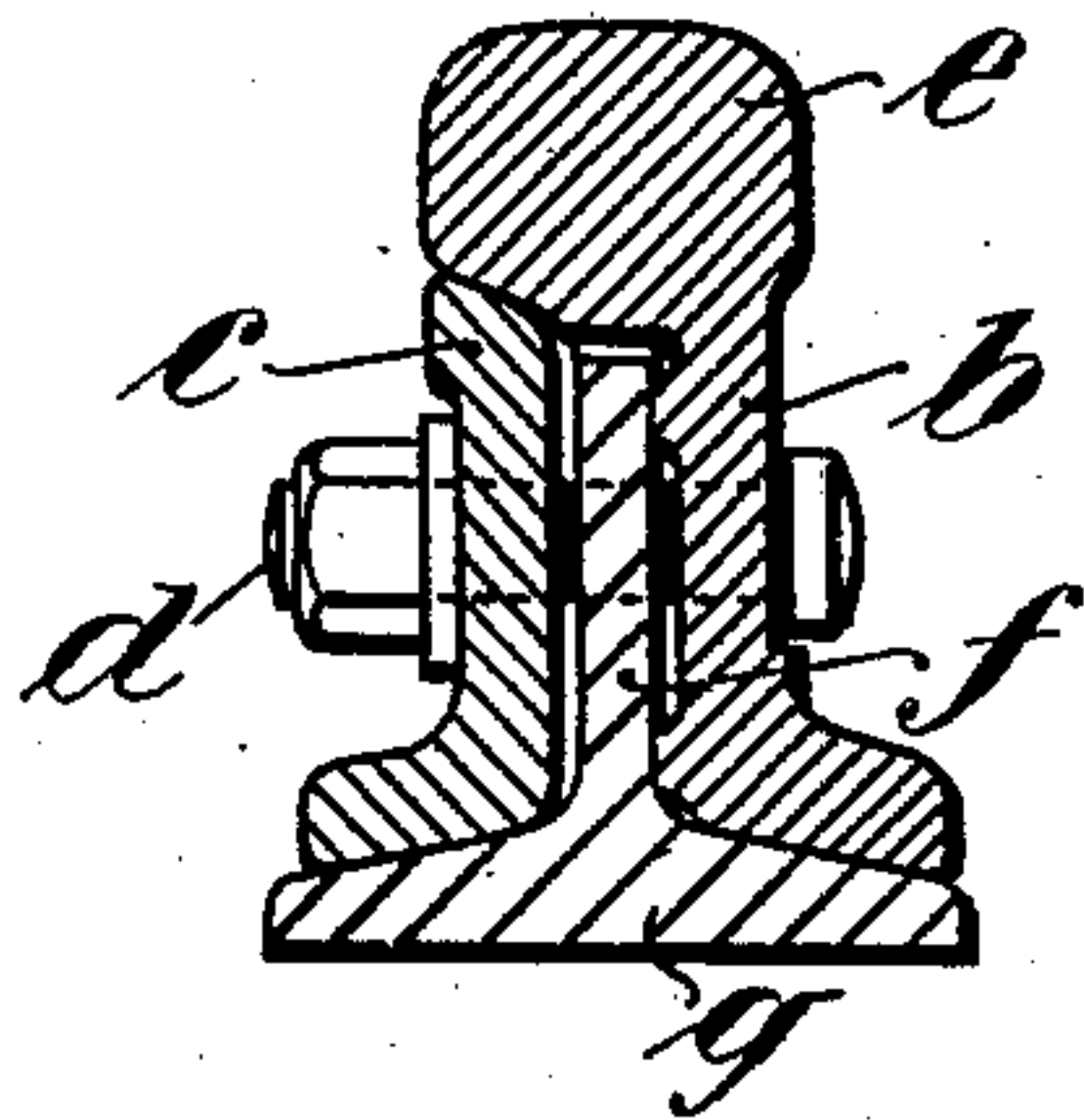


Fig. 8.

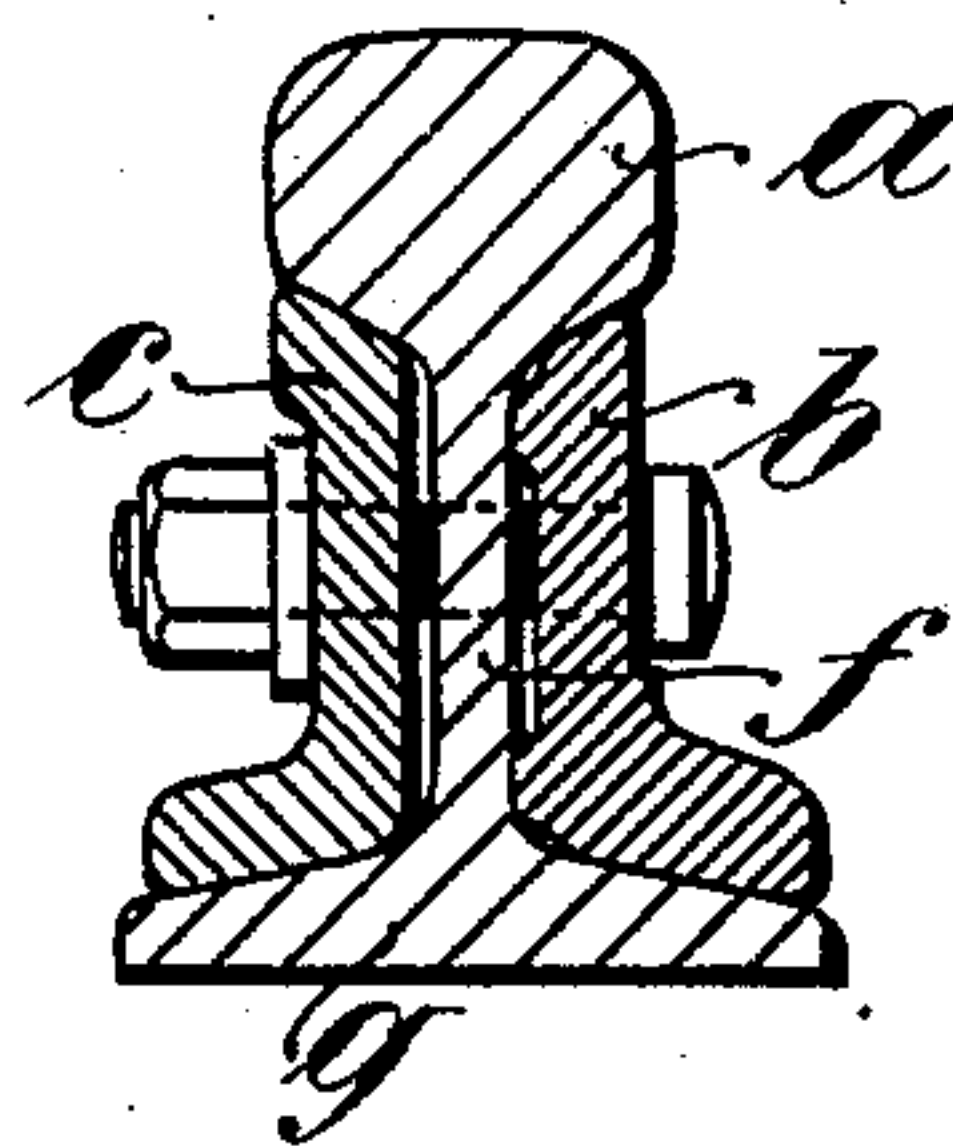


Fig. 9.

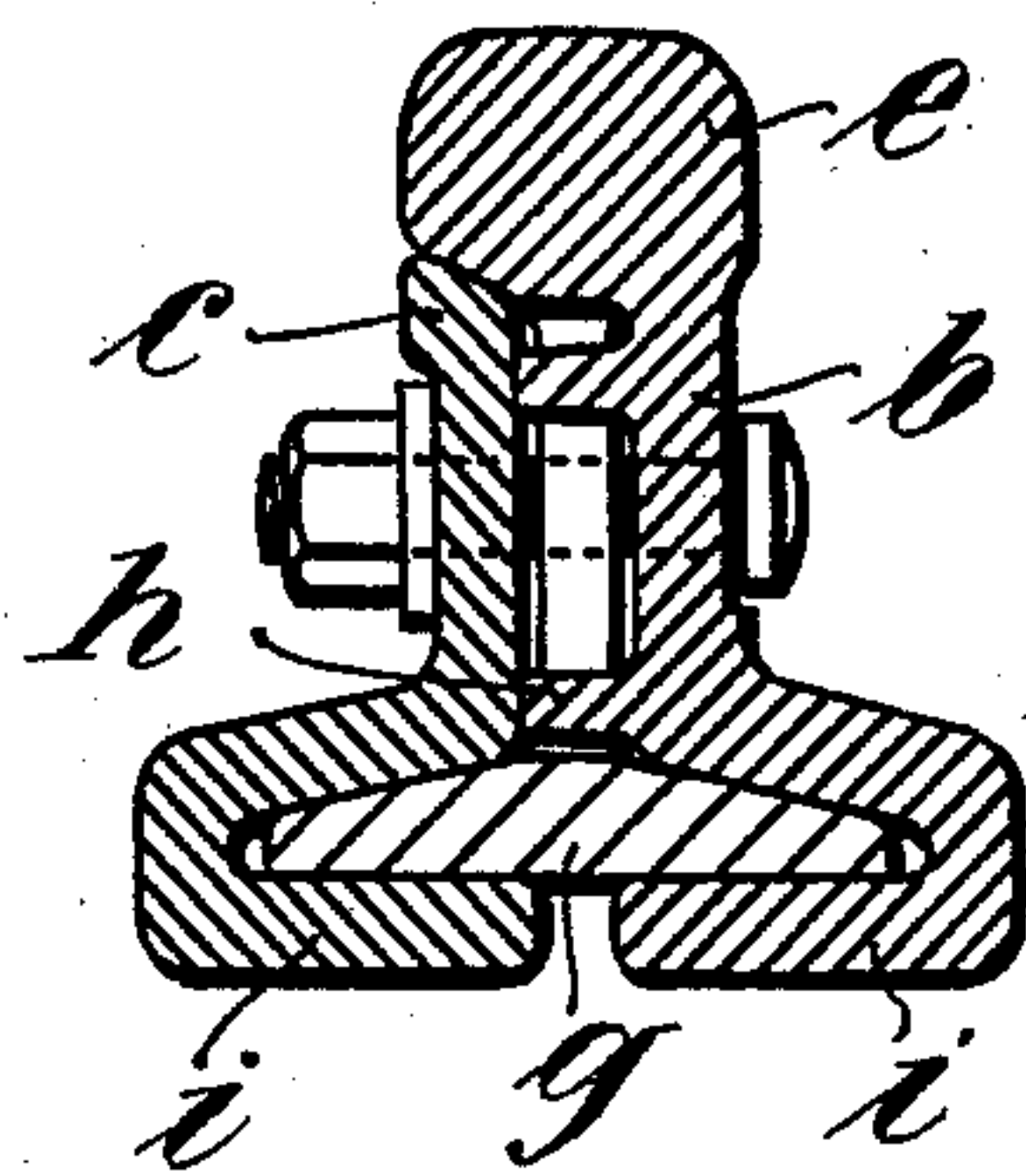


Fig. 10.

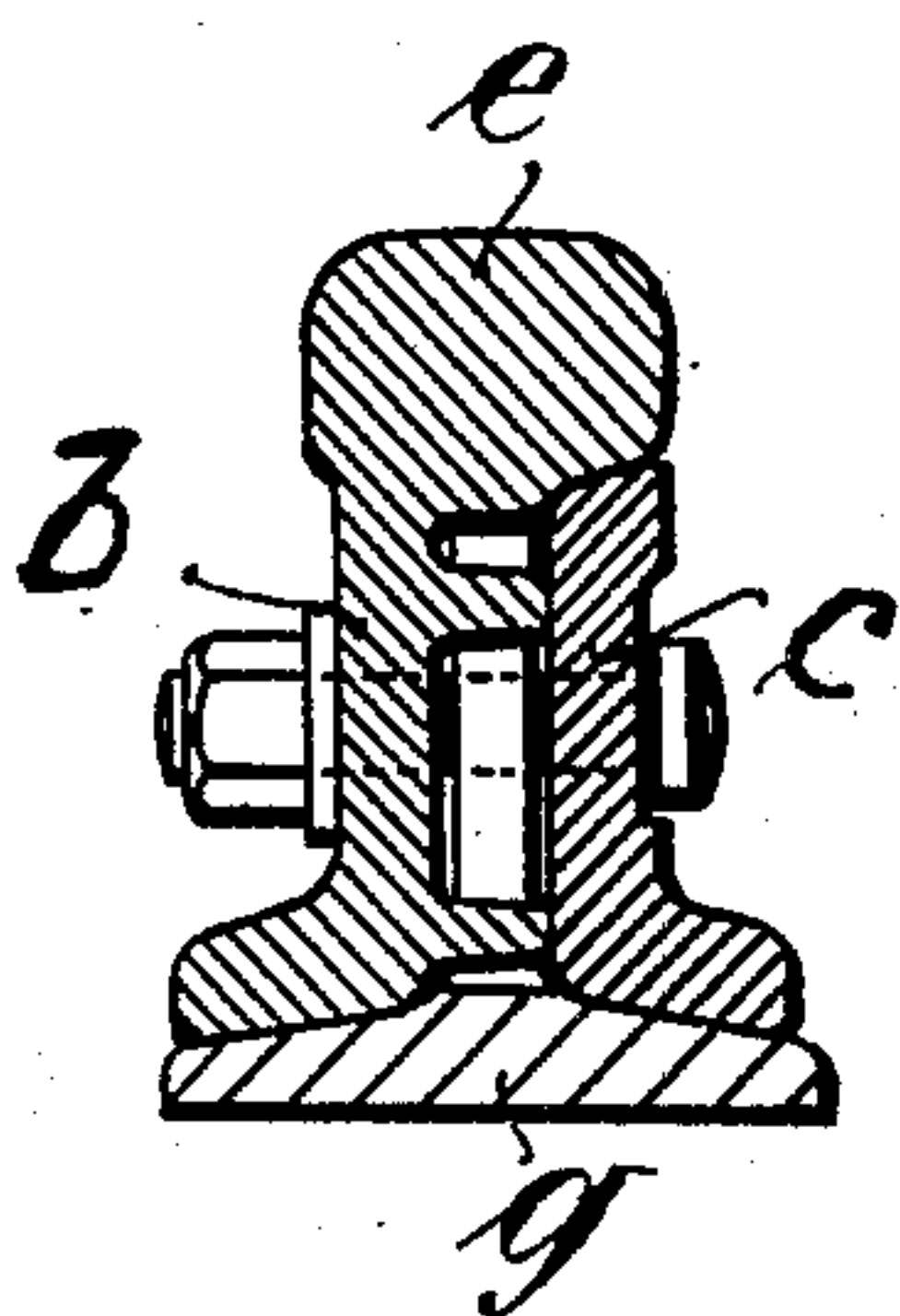


Fig. 11.

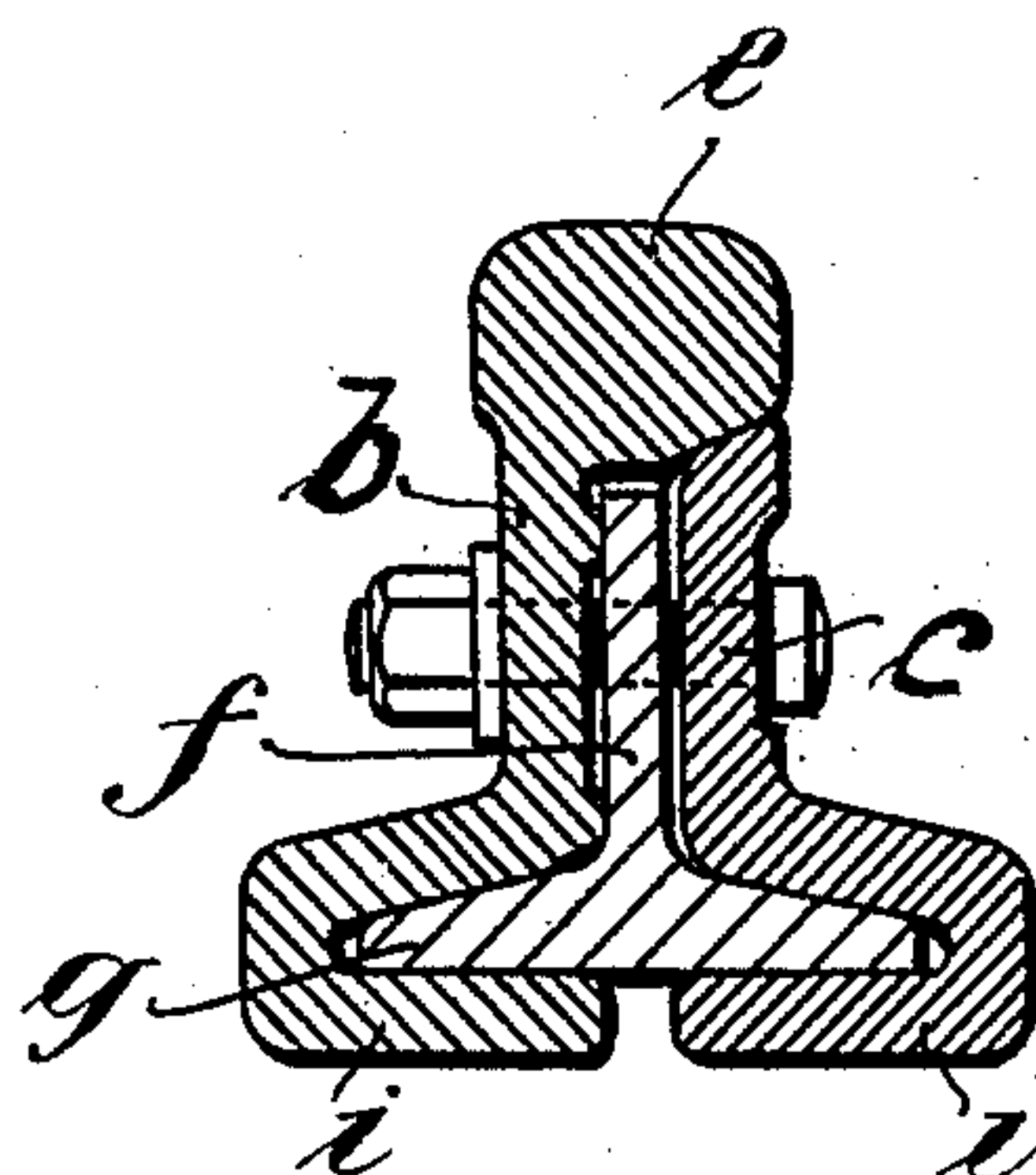


Fig. 12.

Witnesses:

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3 SHEETS—SHEET 3.

Fig. 13.

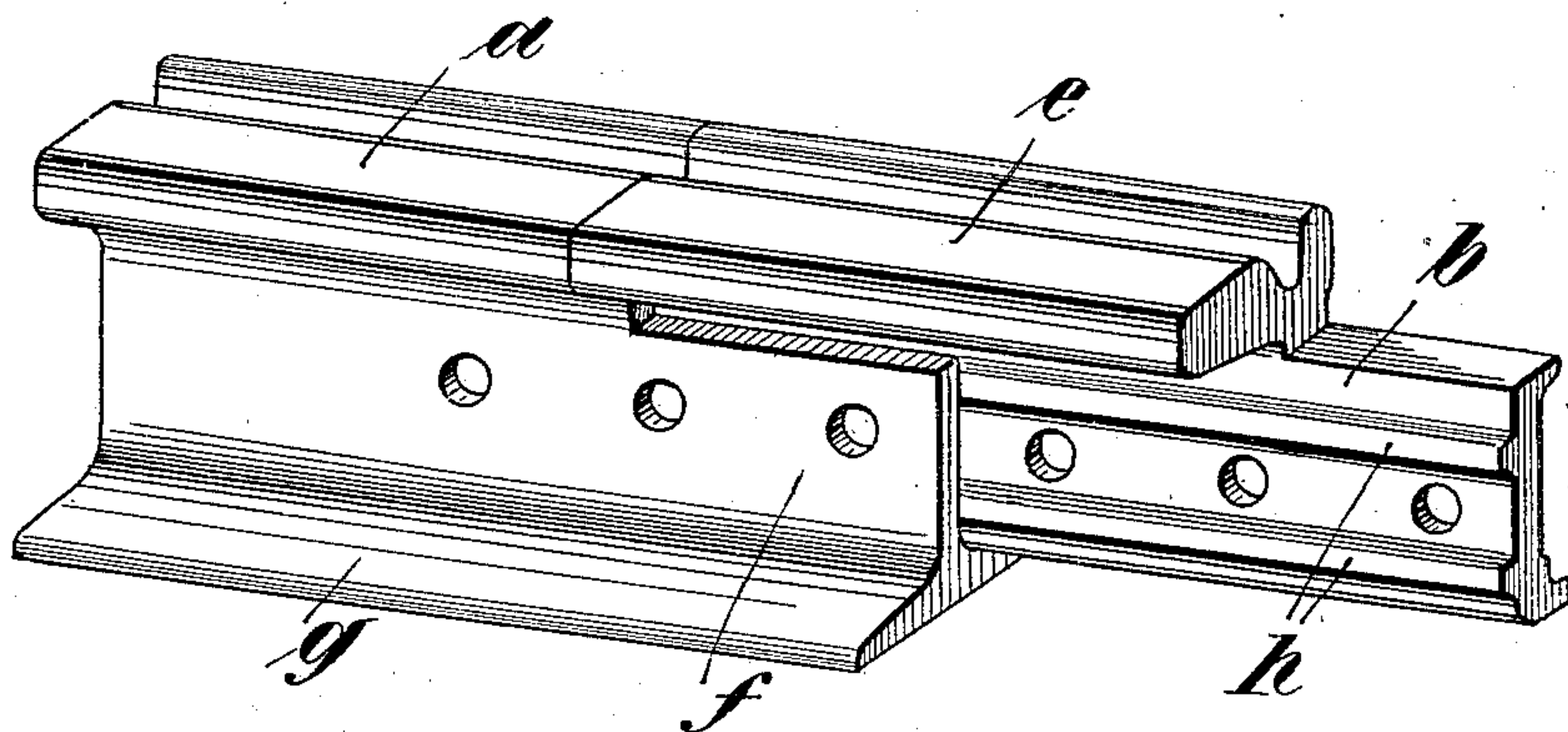
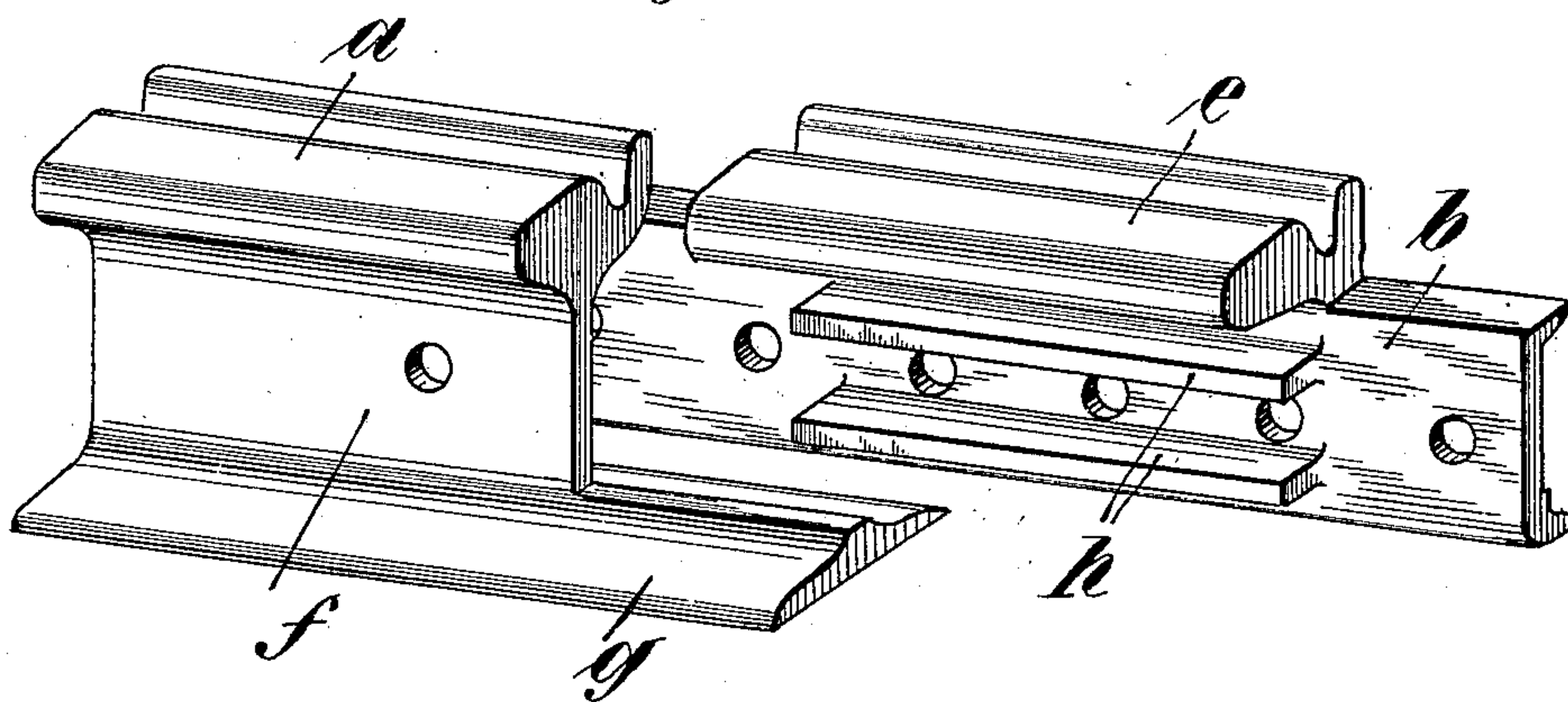


Fig. 14.



Witnesses:

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UNITED STATES PATENT OFFICE.

CARL BLEICHER, OF GROSS LICHTERFELDE, GERMANY.

RAIL-JOINT.

No. 915,067.

Specification of Letters Patent.

Patented March 16, 1909.

Application filed April 29, 1907. Serial No. 370,765.

To all whom it may concern:

Be it known that I, CARL BLEICHER, a citizen of the German Empire, and resident of Gross Lichterfelde, Germany, (whose post-office address is Potsdamer Chaussee 72, Gross Lichterfelde, Germany,) have invented certain new and useful Improvements in Rail-Joints, of which the following is a specification.

10 This invention relates primarily to improvements in the joints of railway and tramway rails, but is also applicable for the repair of defective places in general in such rails.

15 Railway and tramway tracks, as is well known, are particularly subject to wear and tear at those places where two rails terminally abut. This renders necessary unduly expensive rolling-stock, since owing to the wear occasioned, gears and axles get broken, which, again, frequently leads to ob-
struction of the traffic.

20 The purpose of my invention is to overcome these drawbacks and to enable joints to be made, and defective parts of the rails to be repaired much more readily and cheaply than hitherto.

Certain forms of the new joint are illustrated by way of example in the accompanying drawings, in which—

30 Figure 1 is a section on the line A—A of Fig. 4 and Fig. 2 a section on the line B—B of Fig. 4. Fig. 3 is a section showing a modification of the construction illustrated in Figs. 1 and 2. Fig. 4 is a side elevation of a portion of a tramway track at the joint. Fig. 5 is a like view, the track being seen from the other side. Figs. 6 and 7 are cross sections showing two other modifications of the joint. Figs. 8—12 illustrate the application of the invention to railway tracks. Fig. 8 is a section corresponding to Fig. 1. Fig. 9 is a section corresponding to Fig. 2. Figs. 10, 11 and 12 are sections corresponding to Figs. 3, 6 and 7. Figs. 13 and 14 are perspective views showing certain parts respectively separated and uncovered.

Referring more particularly to Figs. 1, 2, 4, 5, 8 and 9 the head portion *a* of each of the two abutting rail ends is removed for a certain distance by any well-known means. At each side of the rails are fish-plates *b*, *c*, held together in the ordinary manner by bolts *d*. One of these fish-plates *b* is provided with a head *e*, which corresponds to the actual rail head *a* and is of the same length as the removed portion of the heads of the two abut-

ting rails, so that the head *e* exactly fills the gap in the tread, while the ends of the plate *b* at each side of the head *e* lie below the heads *a* of the rails (Fig. 4). The plate *b* in conjunction with the fish-plate *c* on the opposite side of the rails, thus affords support for the rail heads on the bolts *d* being tightened.

When a car wheel in running over such a joint presses the one rail end, the pressure is distributed uniformly over the entire rail base. The pressure per superficial unit of the base will be the smaller, the larger the piece of the rails removed. In this manner, by proper selection of the gap at the ends of the rails, the wheel pressure can be reduced to such amount as is favorable for the materials. When the pressure of the car bears on the head *e* of the fish-plate *b*, the pressure is transmitted by the latter and the complementary fish-plate *c* direct to the rail base, where it is uniformly distributed, thus preventing any lateral motion (tilting) of the rails, which might cause loosening of the track. The material, therefore, can not be unfavorably strained and battering of the rail ends or of the headed fish-plate will not be possible even after long use, since all pressure is distributed over a relatively large surface. This uniform distribution of the wheel pressure is particularly advantageous at curves, as the bolts by which the rail joint is held together are scarcely subjected to any strain at all. The joint can also be employed at crossings. The new rail joint has the further economical advantage that it can be employed for rails already in use, without their position in the track having to be altered. Thus in the case of tramways, it is only necessary for the portion of the pavement immediately surrounding the rail ends or rail parts, to be taken up, the guttered head of each rail cut away to the desired extent and the guttered head of the fish-plate inserted in the gap. This method of repairing essentially reduces the high outlay which is occasioned by maintenance of the pavement damaged by lateral pressure or by the replacing or entire rails, with the attendant expense due to regulation of the traffic in such cases; moreover the blocks which occur in the traffic, especially in large cities, when entire rails have thus to be taken up, are entirely overcome.

The rail head can either be cut away direct at the top of the web *f* (Figs. 1 and 8) or the latter also may be removed from a short dis-

tance above the rail foot *g*. (Figs. 3 and 10). The inside wall of one or both fish-plates *b*, *c* may advantageously be provided with ribs or other projections *h*, for the purpose of compensating for any irregularities arising in the rolling of the fish bars or otherwise. If the web also is entirely removed, these projections *h* must naturally be made correspondingly higher (Figs. 3, 6, 10 and 11). The fish-plates may also be provided with flanges *i* which grip around the foot *g* of the rail (Figs. 3, 7, 10 and 12).

The invention can be employed not only at the ends of the rails, but also at any other part of the latter which has become worn.

Having thus described my invention what I claim as new and desire to secure by Letters Patent is:

1. The combination with a pair of rail ends having their abutting head and web portions entirely cut away, of a fish plate of greater length than the removed rail portions, said fish plate carrying in its middle part a rail head piece of a shape and length corresponding to the cut-away rail head portions, and carrying further on its inner side below the rail head piece a plurality of projections corresponding in length to the cut-away web portion and projecting across the gap in the rail webs and abutting against the opposite fish plate.

2. The combination with adjacent rails each having its head and web removed in part, of a fish plate upon one side secured to

adjacent ends of the rails and engaging the under faces of the heads of said rails, and a fish plate upon the opposite side of said rails and having a rail head piece filling the space between the adjacent ends of the heads of the rails and engaging the upper end of the opposite fish plate out of contact with the webs of the rails and having lateral portions extended across the plane of the web of the rail and engaging the adjacent face of the opposite fish plate.

3. The combination with a pair of rail ends having their abutting head and web portions entirely cut away, of a fish plate of greater length than the removed rail portions, said fish plate carrying in its middle part a rail head piece of a shape and length corresponding to the cut away rail head portions, and carrying further on its inner side below the rail head piece a plurality of projections corresponding in length to the cut-away web portion and projecting across the gap in the rail webs and abutting against the opposite fish plate, said fish plates having flanges at their lower ends embracing the foot portions of the rails.

The foregoing specification signed at Berlin, Germany, this sixteenth day of April, 1907.

CARL BLEICHER.

In presence of—

HENRY HASPER,
WOLDEMAR HAUPT.