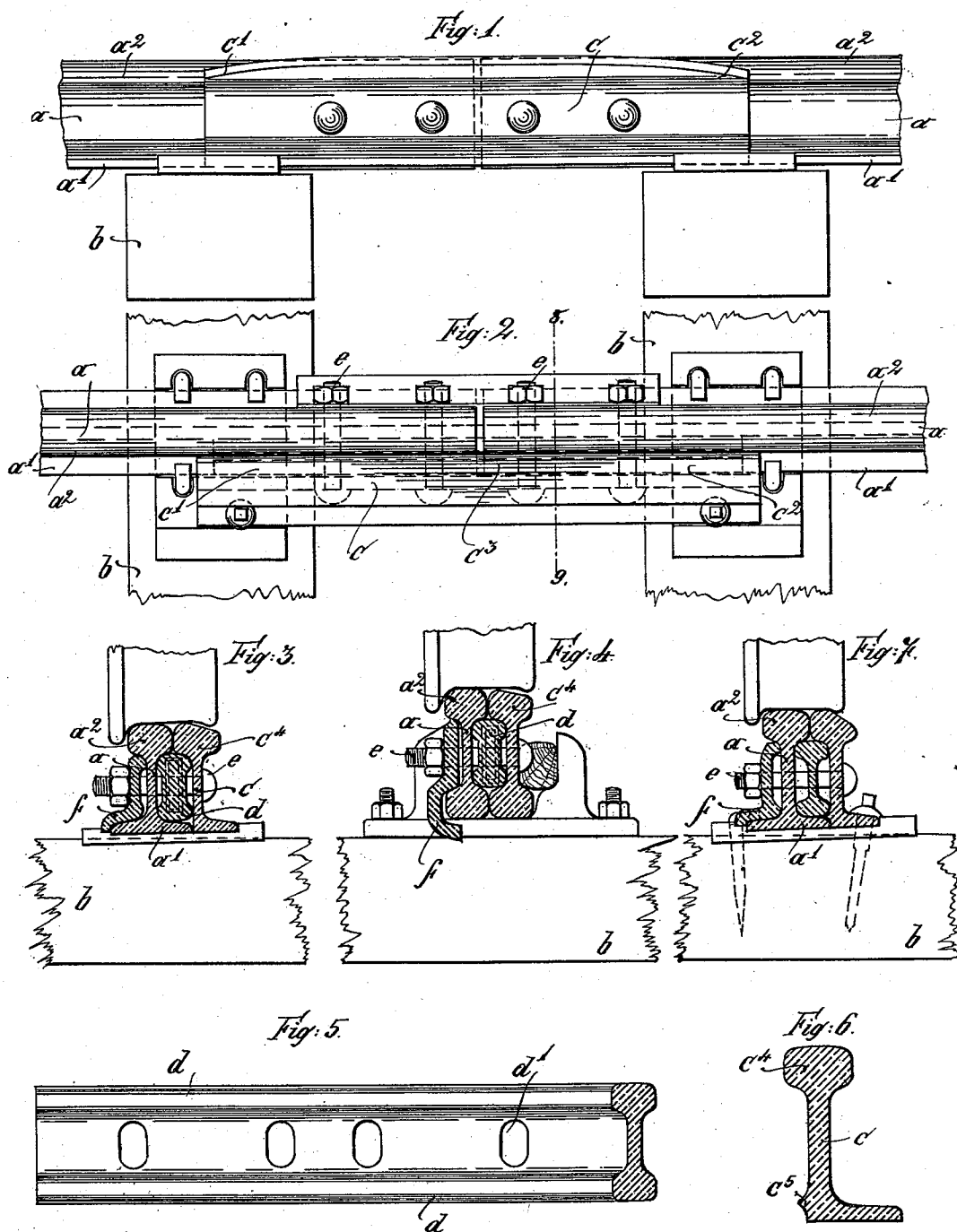


(No Model.)

G. A. HOFFMANN & M. FRIEDLAENDER.
RAILWAY RAIL JOINT.

No. 532,421.

Patented Jan. 8, 1895.



Witnesses:
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by
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UNITED STATES PATENT OFFICE.

GEORG ADOLF HOFFMANN AND MAX FRIEDLAENDER, OF BERLIN, GERMANY; SAID HOFFMANN ASSIGNOR OF ONE-HALF TO SAID FRIEDLAENDER.

RAILWAY-RAIL JOINT.

SPECIFICATION forming part of Letters Patent No. 532,421, dated January 8, 1895.

Application filed September 4, 1894. Serial No. 522,106. (No model.) Patented in Germany April 10, 1892, No. 72,645, and April 2, 1893, No. 73,922; in Switzerland April 29, 1892, No. 5,085; in France April 29, 1892, No. 208,610; in Italy May 14, 1892, No. 31,874; in England May 20, 1892, No. 9,639, and in Belgium April 29, 1893, No. 99,480.

To all whom it may concern:

Be it known that we, GEORG ADOLF HOFFMANN and MAX FRIEDLAENDER, subjects of the King of Prussia, German Emperor, and residents of Berlin, in the Kingdom of Prussia, German Empire, have invented certain new and useful Improvements in Railway-Rail Joints, (for which patents have been obtained in Germany, No. 72,645, dated April 10, 1892, and No. 73,922, dated April 2, 1893; in Switzerland, No. 5,085, dated April 29, 1892; in France, No. 208,610, dated April 29, 1892; in Belgium, No. 99,480, dated April 29, 1893; in Italy, No. 31,874, dated May 14, 1892, and in Great Britain, No. 9,639, dated May 20, 1892,) of which the following is an exact specification.

This invention relates to railway rail joints, and consists in combining with the rail proper in a manner presently apparent an auxiliary safety rail, and our invention, further, relates to the arrangement of a fish-plate of special configuration within the space between the two stems belonging to the main-rail and the auxiliary rail, said fish-plate having a section similar to that of a double-headed rail, and resting with its lower head on the outer portion of the base of the main-rail (the inner portion of the base of the auxiliary safety-rail being cut away), while the upper head of said fish-plate supports the adjoining portions of the heads of the two rails in question, so that, as the three parts are firmly connected by bolts, a very secure joint is produced.

As a further important, although negative feature, it may be mentioned, that by the employment of the improved railway-rail-joint no alteration whatever of the track to be improved is requisite, as the auxiliary safety-rail as well as the double-headed fish-plate may be combined with the main-rails while the latter remain lying on the sleepers in working position and condition.

In order to make our invention more clear, we refer to the accompanying drawings, in which similar letters denote similar parts throughout the different views, and in which—

Figure 1 is a side-view of a part of a main-

rail with the auxiliary safety-rail. Fig. 2 is a plan view of the same. Fig. 3 is a section, taken on line 8—9 of Fig. 2. Fig. 4 is a section through a modified form of construction, all of the rails being double-headed. Fig. 5 is a side-view of a modified form of the central fish-plate. Fig. 6 is a section through a modified form of the outer auxiliary rail. Fig. 7 shows this modified outer rail connected with the main-rail and the central fish-plate rail.

Referring to Figs. 1 to 3, *a* is the main rail resting on the sleepers *b*. These latter support also the auxiliary rail *c*, which, however, is held also by bolts through the adjoining ends of the respective two main-rails, and, in fact, may be held solely by them. The ends *c'* *c''* of the auxiliary rail *c* slope downward below the bearing-surface of rail *a*. The whole auxiliary rail, moreover, slopes outward in its entire length, so that but a portion *c'''* of curved shape remains as high as the bearing-surface of the main-rail. By the combined effect of these two inclinations wheels with groove-like deformations, formed by long use of the wheels, may go smoothly over the joint without getting the least shock. The fast connection between the two rails may be considerably increased by arranging between them, *i. e.*, in the space between the stems of the rails (above the feet and below the heads of the same) a special double-headed fish-plate *d* resting with its lower head on the portion *a'* of the foot of the main-rail, and supporting with its upper head the heads *a''* and *c''* of the main-rail and the auxiliary rail. All these parts are connected by the bolts *e*, together with the ordinary inner fish-plate *f*. It is obvious that all this may be made without affecting the track in any way, whereby an essential difference with regard to other arrangements of joints is constituted.

We prefer to provide the central fish-plate *d* with oblong holes *d'* for the bolts *e*, instead of with round ones, as by the employment of the same a certain degree of elasticity is left to the joint, so that the advantages obtainable by an elastic joint are preserved, while its drawbacks are prevented by the arrange-

ment above described. Further, instead of cutting the inner portion of the base of the auxiliary rail completely away, as in Fig. 3, we prefer to leave a rib c^5 , which rests on the rim of the outer portion of the base of the main-rail, or takes into the space between said rim and the lower head of the central fish-plate, so that this head rests partly also on the said rib, as represented in Fig. 7.

Having now particularly described the nature of our invention, what we desire to secure by Letters Patent of the United States is—

1. In a railway-rail-joint, the combination with the rail proper, of a safety-rail arranged outside the track, said safety-rail having its ends sloping downward, and being sloping outward throughout its entire length, a fish-plate resting on the foot of the main-rail and supporting the heads of both the rails and being arranged between the stems of the latter, for the purpose as described.

2. In a railway-rail-joint, the combination with the rail proper, of a safety-rail arranged outside the track, said safety-rail having its ends sloping downward, and being sloping outward throughout its entire length, a fish-plate resting on the foot of the main-rail and on a rib of the auxiliary rail, and supporting the heads of both the rails, being arranged between the stems of the latter, for the purpose as described.

3. In a railway-rail-joint, the combination with the rail proper, of a safety-rail arranged outside the track, said safety-rail having its ends sloping downward, and being sloping outward throughout its entire length, a double-headed fish-plate resting with its lower head on the foot of the main-rail and on a rib of the auxiliary rail, and supporting with its upper head the heads of both the rails, being

arranged between the stems of the latter, for the purpose as described.

4. In a railway-rail-joint, the combination with the double-headed main-rail proper, of a double-headed safety-rail arranged outside the track, said safety-rail having its ends sloping downward, and being sloping outward throughout its entire length, a double-headed fish-plate resting with its lower head on the foot of the main-rail and on a rib of the auxiliary rail, and supporting with its upper head the heads of both the rails, being arranged between the stems of the latter, for the purpose as described.

5. In a railway-rail-joint, the combination with the double-headed main-rail proper, of a double-headed safety-rail arranged outside the track, said safety-rail having its ends sloping downward, and being sloping outward throughout its entire length, a double-headed fish-plate resting with its lower head on the foot of the main-rail and on a rib of the auxiliary rail, and supporting with its upper head the heads of both the rails, being arranged between the stems of the latter, the whole being connected by bolts with each other as well as with an ordinary fish-plate arranged inside the track, for the purpose as described.

In testimony whereof we have signed this specification in the presence of two subscribing witnesses.

GEORG ADOLF HOFFMANN.
MAX FRIEDLAENDER.

Witnesses as to signature of Georg Adolf Hoffmann:

R. HERPICH,
W. HAUPT.

Witnesses as to signature of Max Friedlaender:

R. HERPICH,
E. SCHULTZE.