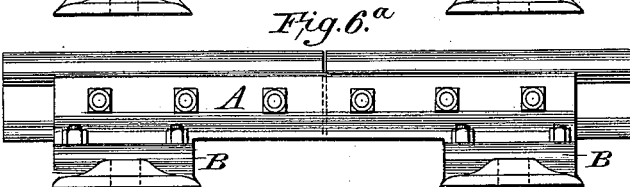
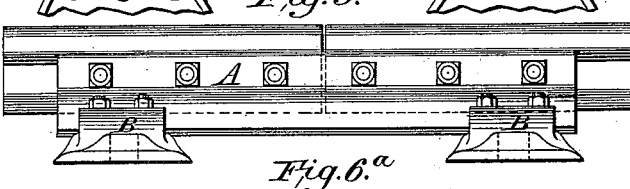
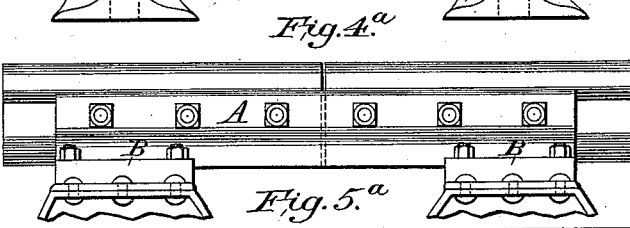
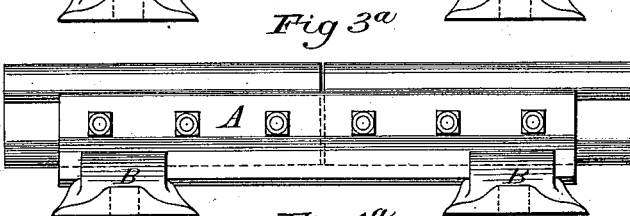
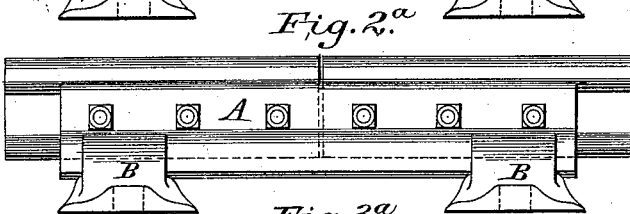
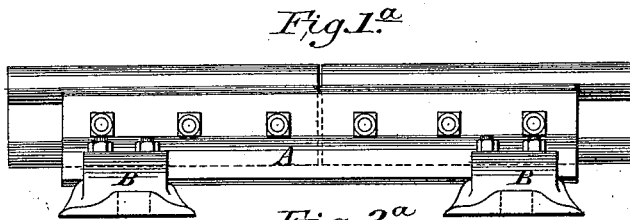
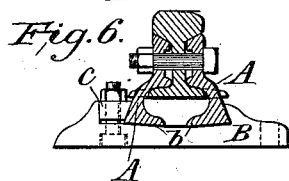
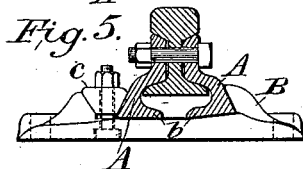
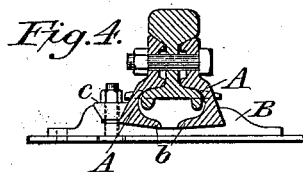
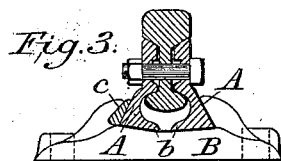
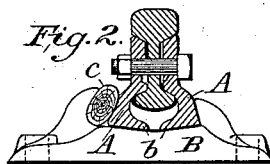
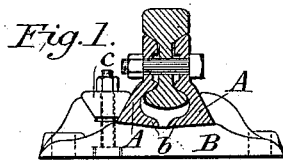


(No Model.)

F. C. WINBY & W. STRICKLAND.
FISH JOINT AND FISH JOINT CHAIR FOR RAILWAY AND
TRAMWAY RAILS.

No. 419,577.

Patented Jan. 14, 1890.



Witnesses:

Arthur Limbey Henderson
David Sidney Pickering

Inventors,

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per Arthur Charles Henderson

Attorney

UNITED STATES PATENT OFFICE.

FREDERICK CHARLES WINBY, OF BRIGHTON, COUNTY OF SUSSEX, AND
WALTER STRICKLAND, OF WOODFORD, COUNTY OF ESSEX, ENGLAND.

FISH-JOINT AND FISH-JOINT CHAIR FOR RAILWAY AND TRAMWAY RAILS.

SPECIFICATION forming part of Letters Patent No. 419,577, dated January 14, 1890.

Application filed November 28, 1888. Serial No. 292,162. (No model.) Patented in Belgium September 10, 1888, Nos. 62,003 and 83,214; in France November 16, 1888, No. 181,103; in Germany November 20, 1888, No. 47,917; in England November 23, 1888, No. 17,036; in Austria-Hungary February 17, 1889, No. 48,736; in Russia June 21, 1889, No. 7,225; in Spain July 1, 1889, No. 1,521; in Canada August 14, 1889, No. 32,090, and in Italy September 30, 1889, No. 25,830.

To all whom it may concern:

Be it known that we, FREDERICK CHARLES WINBY, engineer, and WALTER STRICKLAND, gentleman, citizens of Great Britain, residing, respectively, at Brighton, in the county of Sussex, and Woodford, in the county of Essex, England, have invented new and useful Improvements in Fish-Joints and Fish-Joint Chairs for Railway and Tramway Rails, (patented in Great Britain, No. 17,036, November 23, 1888; also in the following countries: Belgium, Nos. 62,003 and 83,214, September 10, 1888; France, No. 181,103, November 16, 1888; Germany, No. 47,917, November 20, 1888; Austria-Hungary, No. 48,736, February 17, 1889; Russia, No. 7,225, June 21, 1889; Spain, No. 1,521, July 1, 1889; Canada, No. 32,090, August 14, 1889, and Italy, No. 25,830, September 30, 1889, of which the following is a specification.

The object of this invention is to give additional strength to the joints of railway and tramway rails and prevent vertical deflection at the joints and also prevent canting of the rail.

Figures 1 to 6, inclusive, are cross-sections of the ends of the rails, fish plates or joints, and fish-joint chairs. Figs. 1^a to 6^a, inclusive, are side elevations of the two rails coupled together with fish-plates embodying our invention together with the fish-joint chairs.

The fish-plates rest at each end on the fish-plate-joint chairs and act as girders, forming by this method of application a flexible bridge for supporting the ends of the rails from sleeper to sleeper, and thus maintaining them in their vertical and lateral position.

The fish-plates are secured in the fish-plate-joint chairs by means of wedges, bolts, keys, or any other equivalent method or combination for producing a like result, the plates being, as usual, secured to the sides of the rails by bolts and nuts.

The same letters of reference indicate like parts shown in the several figures.

As will be observed by the drawings, the fish-plates A are fitted in the usual manner between the head and foot of the rails. The

feet *b* of these fish-plates being prolonged below the rail, lap beneath it, where they take their bearing and are fixed in the fish-joint chairs B, the whole being locked together, to prevent spreading, by means of wedges, keys, bolts, or some equivalent *c*. On reference to the drawings it will be seen that the chairs in which the fish-plates are held are slightly modified in form; but in all alike the principle of construction is the same.

Figs. 1, 2, and 3 represent double-headed or bull-headed rails, which are usually supported on chairs.

Figs. 4, 5, and 6 represent flanged or Vignoles rails, which are usually fixed to the sleepers without chairs.

In cases where the bottom flanges of the Vignoles rails are comparatively narrow the fish-plates are made to lap around them, as in Fig. 5.

In cases where the bottom flange is formed comparatively broad, we either turn down a part of the flange, as in Fig. 4, or cut a portion off the side, as in Fig. 6, for such length—say eighteen inches—at the ends of the rail where the fish-plates are brought in contact with the rails.

By this method of fishing the joints of rails increased vertical and lateral strength is obtained, and consequently the vertical jolting, so injurious to passengers and rolling-stock alike, is rendered practically *nil*, while at the same time affording increased security.

Having thus described our invention, what we claim, and desire to secure by Letters Patent, is—

The combination, with either a double-headed rail or a Vignoles or flanged rail, the fish-plates A, supported in chairs B from one sleeper to another to form flexible bridges or girders supporting the ends of the rails from sleeper to sleeper in the manner, by the means, and for the purpose herein set forth.

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