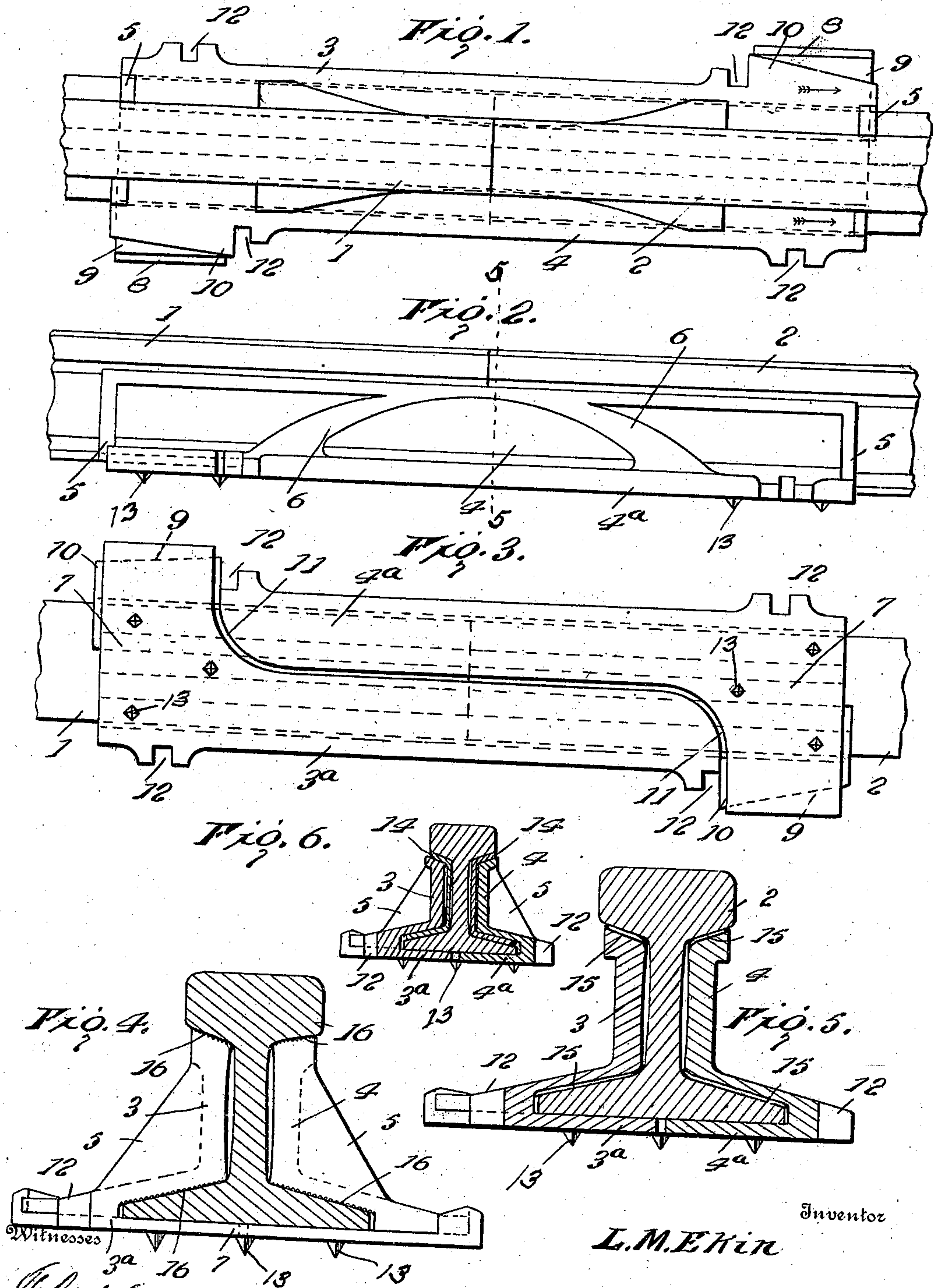


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L. M. EKIN.
RAIL JOINT.

APPLICATION FILED JUNE 13, 1905.



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RAIL-JOINT.

No. 847,560.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, LORIAN MOREAU EKIN, a citizen of the United States, residing at Indiana, in the county of Indiana and State of Pennsylvania, have invented a new and useful Rail-Joint, of which the following is a specification.

My invention relates to improvements in rail-joints and the mode of applying them to rails; and among the objects of my improvements are, first, to provide a true locking-joint which shall clamp the ends of the rails securely without the use of bolts and nuts, thus avoiding the annoyance and danger of loose nuts and the expense of nut-locks; second, that will avoid the necessity of modifying the ends of the rails in any manner, either by punching or drilling holes or cutting notches therein or clipping off corners of same, thus leaving their strength unimpaired; third, that will provide for the natural expansion and contraction of the rails, yet at the same time hold them securely in place and prevent them from "creeping" or dragging the rail-joints from proper position on the ties; fourth, that will form a secure seat for the rail and at the same time not only strengthen the point immediately beneath the abutting ends of the rails, but which may be so elongated as to form a true suspension-joint to support the same from the ties on either side of this point; fifth, that will strengthen the joint against lateral strains and brace the rail against tending to overturn it.

For a full understanding of the invention and the merits thereof and also to acquire a knowledge of the details of construction of the means for effecting the result reference is to be had to the following description and accompanying drawings, in which—

Figure 1 is a top plan view of a rail-joint embodying the invention applied. Fig. 2 is a side elevation. Fig. 3 is a bottom plan view. Fig. 4 is an end elevation of the joint, one of the rails being shown in section mounted therein. Fig. 5 is a vertical section taken on the line 5 5 of Fig. 2. Fig. 6 is a vertical sectional view embodying a modification of the invention.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

In the drawings the numerals 1 and 2 indicate the adjacent end portions of rails, and a

joint comprising the invention consists of a chair embodying complementary sections which are of substantially the same form, save that one of them varies in shape in matter of degree only.

The chair-sections are designated 3 and 4, and each consists virtually of an angle-bar formed with a base (indicated 3^a and 4^a) for the sections 3 and 4, respectively. The vertical portion of each section 3 and 4 of the chair is located at one side of the web portions of the abutting ends of the rails 1 and 2, the lower portion of each section resting on the top of the adjacent basal portions of the rail ends, and the base 3^a of the section 3 and 4^a of the section 4 extend beneath the adjacent base portions of the rails 1 and 2.

The vertical or horizontal portions of the sections of the chair are reinforced at the ends by means of vertical ribs or flanges 5 and intermediate of the ends thereof by means of integral curved or arc-shaped ribs 6. The lower portions of each of the ribs 6 are broadened, so as to subserve the substantiality of the same as a reinforcement and brace for the vertical and horizontal portions of each section of the chair. The members 5 and 6 furthermore are designed to counteract the spreading tendency of the two sections 3 and 4 when arranged in operative positions and afford a support to prevent sagging of the ends of the rails 1 and 2 at the point of jointure. The base 3^a of the section 3 and the similar portion of the section 4 of the chair are of substantially the same formation structurally, so that the description applying to the section 3 will apply readily to the construction of the section 4. The said base 3^a of the section 3 has its inner edge terminating approximately at a point constituted by a longitudinal line centrally of the under sides of the base of the rails 1 and 2. In other words, the base 3^a of the section 3 extends half-way across the base of the portions of the rails 1 and 2; but at one end of the section 3 said base is provided with an integral lateral extension 7, formed at its outer edge with a longitudinal vertical flange or projection 8. The formation of the extension 7 and flange 8 of each of the sections 3 and 4 is such as to provide a keyway 9, which keyway 9 of one of the sections is adapted to receive a wedge or key extension 10, which is formed at the opposite end of the other section. The key extension 10 of each section 3 and 4 is located at the end thereof opposite that having the

keyway 9 formed therein, and this key or wedge extension 10 is adapted to have a wedging action in the keyway of the section in which it is received. The outer edge of the extension 10 of each section has a wedging-surface which performs the wedging function, causing the sections 3 and 4 to move together and engage with opposite side portions of the rail ends to firmly support said rail ends in proper positions for actual use and reinforce the same substantially.

Generally describing the construction of the sections 3 and 4 of the joint, therefore, it will be apparent that each section is provided at one end with a longitudinal keyway formed by the extension 7 and the flange or projection 8, and at the opposite end each section is formed with a key or wedge extension designed to cooperate with the other section in the keyway thereof. The under side of the base portions 3^a and 4^a of the sections 3 and 4 is cut away adjacent to the key or wedge extension 10 thereof, as shown at 11, so as to receive the lateral extension 7, located near this portion of the section of the chair. In placing the joint hereinbefore described in actual working position the sections 3 and 4 are disposed at opposite sides of the rail ends, and by longitudinal movement thereof the key or wedge extension of each section is forced into the keyway of the other section, and the relative longitudinal movement will cause the sections to clamp hard against the opposite sides of the rails in a manner entirely sufficient to reinforce the rails as necessary under conditions of actual service.

As mentioned hereinbefore, there is a dissimilarity between the construction of the sections 3 and 4 with reference to degree only. In other words, it is preferred that the inclination of the wedging-surface of one of the extensions 10 or one of the sections 3 of the chair be greater than the corresponding inclination of the extension 10 of the wedging-surface of the other section. The reason for the above structure is to admit of one end portion of the joint engaging one of the rail ends with a greater clamping or engaging action than that attaching the other end of the joint and the other rail end. The section having the wedging-surface of the greater inclination will therefore cause the adjacent end of the joint to be positively or securely attached to one of the rail ends, while the other end of the joint, though firmly embracing and reinforcing the other rail end, will permit of a certain amount of longitudinal movement of the latter, thereby providing for expansion and contraction of the two connected rails. The section of the joint having the wedging-surface of the greater inclination or angle with reference to its longitudinal axis may be designated by means of an arrow, such as shown in Fig. 1 of the drawing. The manner of attaching the joint to

the rails to admit of the expansive and contractive movement thereof may be in accordance with a modified adaptation of the invention to be hereinafter described.

The rail-joint will be attached to the ties of the road-bed by means of spikes or similar fastenings engaging in notches 12 formed in the outer edge portions of the base of each of the sections 3 and 4. The manner of fastening the joint to the ties will counteract any tendency of the rails to overturn in connection with the other constructional features of the invention. Points or projections 13 extending from the under sides of the base portions 3^a and 4^a of the sections 3 and 4 are adapted to enter the upper surface of the rail-ties on which the joint rests in order to more firmly position such joint from movement. By reason of the peculiar means by which this invention will accommodate for the contraction and expansion of the rails it is necessary that regard be had to the arrangement of the sections of each rail-joint of the track, so that each rail will have one end firmly secured to the ties by means of a rail-joint or otherwise, while the other end of such rail will be free to move slightly when effected by variation in temperature, and all tendency of the rails to "creep" with respect to the joints will be eliminated. The above may be readily accomplished by having the arrows of the joints point in the same direction when the construction of the invention is as shown in the preferred embodiment of the invention hereinbefore set forth.

In the modification shown in Fig. 6 it is contemplated to interpose bushing-plates 14 between the end portion of one rail and the adjacent end portion of the joint, so that the last-mentioned end of the joint will engage the rail to which the bushing-plates are applied more firmly than the opposite end of the joint engages the other rail end. The bushing-plates 14 may be of a conformation somewhat similar to the form of the ordinary type of angle-plates, the function of these members being, however, entirely different, as will be obvious. In the construction in Fig. 6 the keyways 9 of each of the sections of the joint will receive the key or wedge extensions in the same manner as hereinbefore set forth; but the inclination or angle of the wedging-surface of the extensions 10 will be exactly the same.

As a substitute for the bushing-plates 14 or equivalent means it is designed that the function of these members may be secured by placing some abrasive, adhesive, oxidizing, or similar substance—such as sand, white lead, salt, or the like—either on one of the rail ends or on those surfaces of the rail-joint that come into contact with one of the rail ends. The same result may be accomplished also by the application of a lubrication, non-adhesive, non-oxidizing, or similar substance, such

as oil or paint, to the rail end which is to have the longitudinal movement facilitating the accommodation of the expansive and contractive tendency of the rails. Both of these
5 alternatives may be used together, if desired.

In either the preferred or modified forms of the invention the end of the rail-joint intended to grip the rail more tightly or firmly may be provided with small corrugations (indicated 15) on the under side of the horizontal portions of the sections and on the upper edge portion of the vertical members of the sections, said corrugations running approximately at a right angle to the longitudinal
15 axis of the rail. Any equivalent means to the above may be used. The other end portion of the joint may be provided with longitudinal corrugations 16 to facilitate the slight longitudinal movement of the rail, which is
20 gripped or engaged by the portion of the joint having said longitudinal corrugations which do not have as great a tendency to prevent movement of the rail engaged thereby as do the transverse corrugations 15. At
25 any event all of the rails connected together in a single track should be free to move in the same direction in allowing for expansion and contraction.

Having thus described the invention, what
30 is claimed as new is—

1. In combination, rail ends, a joint there-

for, one end portion of the joint having means for increasing the friction between it and one of the rail ends to positively secure said parts together, and the other rail end and opposite
35 end portion of the joint being relatively movable.

2. In combination, rail ends, a joint therefor comprising a chair, means for attaching the chair to the rail ends, and means for effecting greater frictional or clamping action of
40 one end of the joint with respect to the adjacent rail end than is effected between the opposite end portion of the joint and the other rail end.

3. In combination, rail ends, a joint therefor comprising a chair, means for securing said chair to the rail ends, the portions of one end of the chair abutting with one of the rail ends, being provided with corrugations transverse to the line of axis of the rails, while the
45 similar portions of the chair engaging the other rail end are provided with longitudinal corrugations.

In testimony whereof I have signed my
55 name to this specification in the presence of two subscribing witnesses.

LORIAN MOREAU EKIN.

Witnesses:

S. L. LOWREY,
E. T. PARRISH.