H. G. GILLMOR.

MEANS OF FORMING RAIL JOINTS.

APPLICATION FILED APR. 13, 1907.

1,050,450. Patented Jan. 14, 1913.

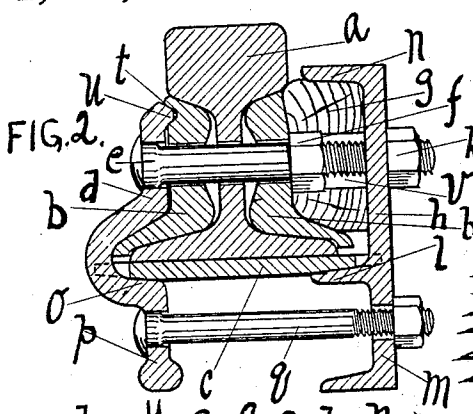

FIG. 2.

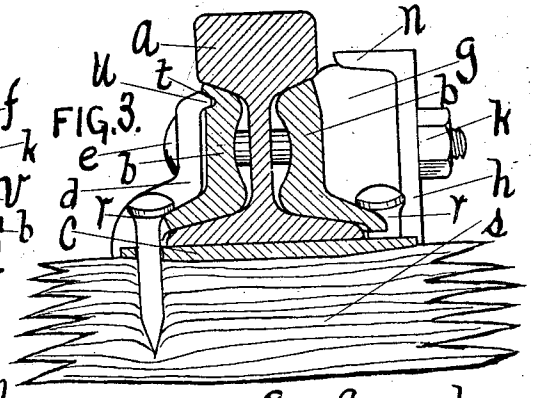

FIG. 3.

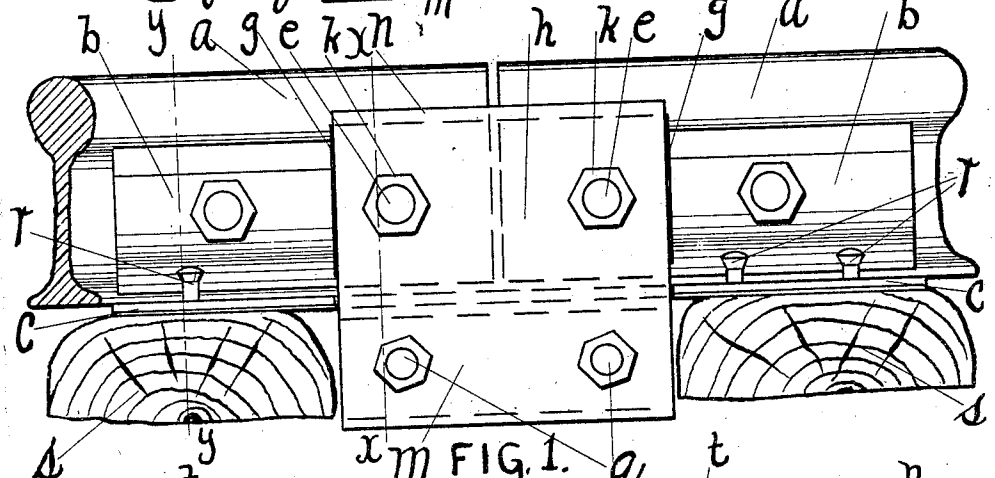

FIG. 1.

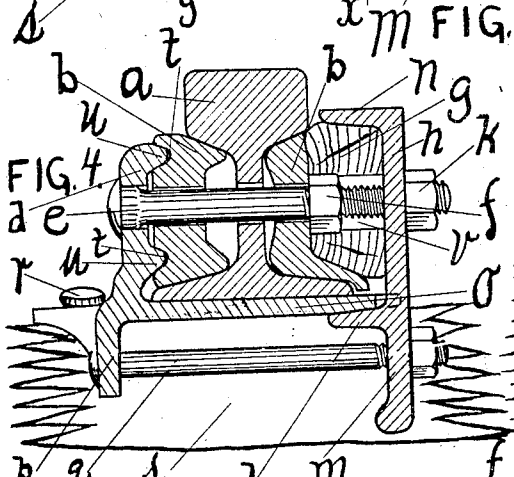

FIG. 4.

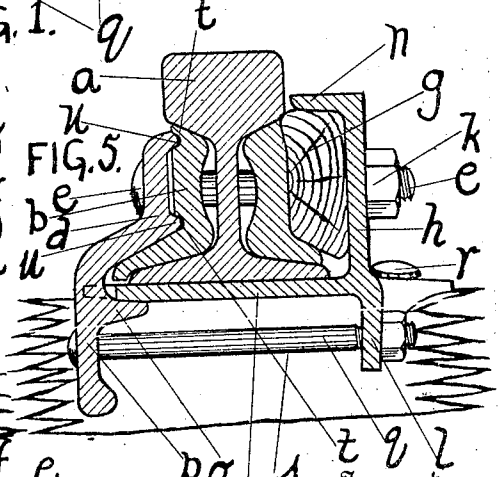

FIG. 5.

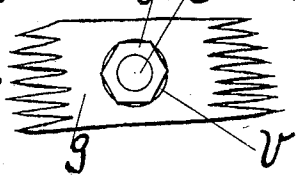

FIG. 6.

Witnesses

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MEANS OF FORMING RAIL-JOINTS.

1,050,450. Specification of Letters Patent. Patented Jan. 14, 1913.

Application filed April 13, 1907. Serial No. 368,034.

To all whom it may concern:

Be it known that I, HORATIO G. GILLMOR, a citizen of the United States, residing at Bath, in the county of Sagadahoc, State of Maine, have invented certain new and useful Improvements in the Means of Forming Rail-Joints, of which the following is a specification, accompanied by drawings.

This invention relates to rail joints and one of its objects is to so form such joints as to efficiently support the rail ends and overcome the tendency to vertical movement of one rail end relative to the other as the wheels pass.

Another object is to provide for extra strength at the joints by additions to the parts now ordinarily employed for the making of such joints, making use of the old parts; and to so combine the parts that the stresses will be distributed among them, under all conditions of loading the joint, so that each part will take its portion of the working stresses.

Other objects are to effectually lock a portion or all of the nuts securing the fish bars in position against turning upon their bolts and to provide efficient means to prevent that movement of the rails as a whole known as creeping.

Further objects of the invention will hereinafter appear; and, to these ends, the invention consists of a rail joint for carrying out the above objects, embodying the features of construction, combination of elements and arrangement of parts having the general mode of operation as hereinafter described and claimed in this specification and shown in the accompanying drawings, in which:

Figure 1 is a side elevation of a joint embodying the invention. Figs. 2 and 3 are sections at the planes indicated by (*x x*) and (*y y*) respectively, in Fig. 1. Figs. 4 and 5 are sections illustrating modified forms of joints embodying the invention. Fig. 6 is a view illustrating the method of locking the nuts against slackening.

Similar letters refer to similar parts throughout the several figures.

(*a*) represents the meeting ends of the rails; (*b*) angle or fish bars; (*c*) a base plate.

(*d*) represents a clamp or chair, (*e*) the bolts securing the fish bars and clamp or chair in position, and (*f*) the nuts on these bolts.

(*g*) represents a packing piece, preferably of wood or other compressible material, and (*h*) a chair secured in position by extended ends of the bolts (*e*) and nuts (*k*) screwed thereon. The chair (*h*) has a base (*l*) to engage with under surfaces of an edge of the base plate (*c*) and downwardly projecting stiffening (*m*) and an inwardly projecting flange (*n*) from its upper edge, and the clamp or chair (*d*) has a base (*o*) to engage with the surface of the opposite lower edge of the base plate (*c*), and is also provided with downwardly projecting stiffening (*p*). The downwardly projecting portions (*m*) and (*p*) of the clamp and chair are pierced with holes to receive the bolts (*q*) to draw these toward one another after the nuts (*k*) have been set up on the bolts (*e*) to draw the chair (*h*) into position.

(*r*) represents spikes or screws traversing notches in the fish bars and holes in the base plate for securing the joint to the ties or sleepers (*s*).

(*t*) represents grooves in the fish bar at that side of the joint at which the clamp or chair (*d*) is applied and (*u*) a corresponding rib on the clamp or chair to engage with these grooves.

(*v*) is the hole in the packing material fitted between the fish bar (*b*) and the chair (*h*).

In making up the joint the base plate is laid underneath the meeting ends of the rails, the angle or fish bars (*b*) placed in the usual manner and the clamp or chair (*d*) and the bolts (*e*) placed in position and these parts drawn into place by setting up the nuts (*f*) upon the bolts (*e*). This causes the base plate (*c*) and the fish bar (*b*) to be clamped firmly upon the base flanges of the rails between the base (*o*) and the body of (*d*) and at the same time draws the rib (*u*) of (*d*) into the groove (*t*) in the fish bar (*b*). The purpose of this is to provide for transmitting stresses to (*d*) by shearing stresses in the rib (*u*) so that the fish bar (*b*) and the chair (*d*) shall act more nearly as one piece than would be the case were friction alone, assisted by the engagement of the flange of the fish bar and the rail bases with (*d*), relied upon. The packing material is then placed in position at the side of the joint opposite to the chair or clamp (*d*). The chair (*h*) is then placed in position with the extended ends

of the bolts (e) traversing the web of the chair (h) and nuts (k) placed on the bolt ends. As illustrated in Fig. 6 the holes (v) in the packing material (g) are bored somewhat less in diameter than the diameter of the circumscribing cylinder of the nuts. As the nuts (k) are set up the packing material is forced into position and the nuts (f) forced into the holes (v) in this material with the corners of the nuts pressing into the packing material. The nuts are in this manner effectually locked against turning on the bolts. The packing material (g) is contained within a space bounded by the angle or fish bar (b), the inwardly projecting flange (n) and the web of the chair (h) and the base (l) of the chair (h) bear upon the base plate (c) underneath the rails, so that as the nuts (k) are set up a transverse compression of (g) is produced and at the same time an upward pressure upon the flange (n) which produces an upward pressure of the base (l) upon the base plate (c) and hence upon the lower surfaces of the bases of the rails while a downward pressure is exerted by the fish bar upon the base flanges of the rails.

The base plate is notched as shown in Figs. 1, 2 and 3 so that after the clamp and chair are in position longitudinal movement of the base plate with respect to the clamp and chair is effectually prevented. To further secure the parts in position the bolts and nuts (q) traversing the downwardly projecting stiffening flanges (m) and (p) of the clamp and chair are placed and set up.

As shown in the drawing, (d) and (h) extend only sufficiently far each side of the opening between the rails to receive bolts for securing them in position and they have downwardly extending stiffening webs below the bases of the rails. By arranging the parts in this way the material is placed where it will add most to the strength of the joint and the moment of resistance of the sections of the parts, upon which their ability to resist bending stresses depends, made much greater than would be the case were the downwardly projecting stiffening omitted.

In the form of the joint illustrated in Figs. 1 to 3, the fish bars extend beyond the chairs and their flanges are notched to receive spikes or screws (r). Registering with the notches in the flanges of the fish bars there are holes in the base plate (c) so that the spikes (r) may be driven in the notches in the flanges of the fish bar and the holes in the base plate to secure the parts of the joint to the ties or sleepers (s), as illustrated in Fig. 3; and, in this manner the rails and all the parts of the joint are effectually secured to the ties or sleepers and the longitudinal movement known as creeping prevented.

In the form of the joint illustrated in Fig. 4 the base plate is omitted and instead thereof the base (c) of the chair (d) is extended underneath and to the opposite side of the rail bases, its edge being pierced with holes registering with the notches in the flange of the fish bar at that side of the joint to receive the screws or spikes for securing the joint and rails to the ties. A special form of fish bar is employed in conjunction with this clamp with two grooves (t) adapted to receive the two ribs (u) of the clamp (d). In this form of the joint the clamp (d) would ordinarily be made sufficiently long to receive all the bolts (e) and the spikes for securing the joint to the ties whereas the chair (h) would be made of such length as to extend sufficiently for each side of the opening in the joint to receive one bolt at each side of the joint. To form the stiffening flange or web (p) the flange provided in (d) to take part of the spikes for securing the joint to the ties is turned downwardly over a portion of the middle of the length of the chair and pierced with holes for the bolts (q).

In the form of the joint illustrated in Fig. 5 the base plate (c) is omitted and instead the base (l) of the chair (h) is extended underneath the rail bases and beyond the edges of the fish bar opposite to the chair (h), the edge of this extended base (l) being pierced with holes registering with notches in the fish bar at that side of the joint to receive the spikes for securing the joint and rails to the sleepers in a manner similar to that shown in Fig. 3. In this form of the joint the channel chair would ordinarily be extended sufficiently at both sides of the joint to take all of the bolts (e) and the screws or spikes (r) for securing the joint to the sleepers, while the clamp (d) would extend for a sufficient distance each side of the opening in the joint to receive one bolt at each side of the opening at the joint for securing it in position. The stiffening flange (f) is formed by turning down the spiking flange of the chair (h) over a portion of the middle of the length of the chair and piercing this with holes for the bolts (q) as illustrated in the drawing.

By constructing the joints in accordance with this invention it is possible to add very greatly to the strength of joints already in service without discarding any parts in use excepting the bolts, to provide an efficient base support for the rail ends and to efficiently lock a part or all of the nuts upon the bolt securing parts of the joint in position.

Obviously some features of this invention may be used without others and the invention may be embodied in widely varying forms.

Therefore, without limiting the invention

to the constructions shown and described, or enumerating equivalents, what I claim and desire to secure by Letters Patent is:

1. A rail chair formed closely to embrace parts of the rail joint immediately above and below the base flanges of the meeting rail ends and provided with an upright having a rib adapted to engage with a corresponding groove in a fish bar.

2. A rail joint, including, in combination with the rails, fish bars and bolts and nuts securing the same, a packing of compressible material constructed to engage with and have partially embedded therein the nuts upon said bolts whereby said nuts are prevented from turning upon said bolts, and means for drawing said packing into and retaining the same in position, substantially as described.

3. A rail joint, comprising the rails, fish bars, a chair constructed with a base adapted to support the rails and an upright at one side of the rails, bolts traversing the rails, fish bars and chair upright, nuts fitted upon said bolts between the chair upright and the rails for securing said fish bars in place, a compressible packing between a fish bar and the upright of the chair and nuts fitted upon the ends of the bolts outside the chair upright for securing the chair in position and compressing the packing, substantially as and for the purposes described.

4. A rail joint, including in combination with the rails, a fish bar, a base plate, a chair constructed to engage with said base plate in such manner as to support the rails, and a block of wood fitted between said chair and said fish bar, for substantially the purposes set forth.

5. A rail joint comprising the rails, fish bars, a base plate, a chair having a base constructed to bear upon said base plate in such manner as to support said base plate and the rails, and a piece of compressible material filling the space between a fish bar and said chair at one side of the rails, for substantially the purposes described.

6. A rail joint, comprising the rails, fish bars, a chair at each side of the rails having downwardly projecting stiffening flanges, and bolts traversing said downwardly projecting flanges and provided with nuts for drawing said flanges toward one another underneath the rails, for substantially the purposes described.

7. A rail joint comprising the rails, a fish bar, a base plate, chairs at each side of said rails, constructed to engage with said base plate in such manner as to support the bases of the rails, and a block of compressible material fitted in between the fish bar and a chair at one side of the rails, substantially as described.

8. A rail joint, including, in combination with the rails, a fish bar, a base plate, chairs, of less length than said fish bar and base plate, at each side of the rails constructed to bear upon said base plate and provided with webs or flanges projecting downwardly below the level of said base plate and bolts and nuts for securing the parts in position, substantially as described.

9. A rail joint comprising the rails, a fish bar having a groove and a chair having a corresponding rib engaging with the groove in said fish bar at one side of the rails; a fish bar, a chair, and block of wood filling the space between said fish bar and said chair at the other side of the rails; and means for securing the parts in position for substantially the purposes described.

10. A rail joint comprising the rails; a base plate; a fish bar having a groove and a chair having a corresponding flange engaging with the groove in said fish bar and bearing upon said base plate at one side of the rails; a fish bar, a chair and a piece of wood fitting between said fish bar and said chair at the other side of the rails and bolts and nuts securing the parts in position, for substantially the purposes set forth.

11. A rail joint, including, in combination with the rails, a fish bar having flanges projecting beyond the edges of the bases of the rails with spiking apertures in said projecting flanges, a base plate projecting for a portion of its length beyond the edges of the bases of the rails provided with spiking apertures registering with the spiking apertures in said fish bar flanges, spikes traversing the coöperating apertures in the fish bar flange and the base plate, a chair interlocking with said base plate to prevent longitudinal movement of said chair with respect to said base plate, and means to prevent longitudinal movement of the rails with respect to the chair and other parts of the joint, substantially as described.

12. A rail joint comprising the rails, fish bars having flanges projecting beyond the edges of the bases of the rails with spiking apertures in said projecting flanges, a base plate projecting for a portion of its length beyond the edges of the bases of the rails provided with spiking apertures, registering with the spiking apertures in said fish bar flanges, spikes traversing the coöperating apertures in a fish bar flange and the base plate, chairs interlocking with said base plate to prevent longitudinal movement of the chairs with respect to said base plate, and means to prevent longitudinal movement of the rails with respect to the chairs and other parts of the joint, for substantially the purposes described.

13. A rail joint, including, in combination with the rails, fish bars and bolts and nuts securing the same, a chair having a base and an upright, a wood filler block constructed to engage with and have partially embedded

therein the nuts upon the bolts securing said fish bars whereby said nuts are prevented from turning upon said bolts and to fill the space between the fish bar and the chair upright at one side of the joint and means for securing said chair in position, substantially as described.

14. A rail joint comprising the rails, a fish bar and a chair at one side of the rails and, at the other side of the rails, a fish bar, a chair having a base and an upright, and a wood block between the chair upright and the fish bar, bolts traversing the rails, fish bars and the upright of the chair and fitted with nuts bearing upon the fish bar for securing fish bars in position, nuts fitted upon the bolts outside the upright of the chair for securing the chair and compressing the wood filling between it and the fish bar, means for securing the rails against longitudinal movement with respect to the chairs, and means for securing the chairs to the ties, substantially as and for the purposes described.

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

H. G. GILLMOR.

Witnesses:
H. H. Bonnemort,
E. E. Williams.