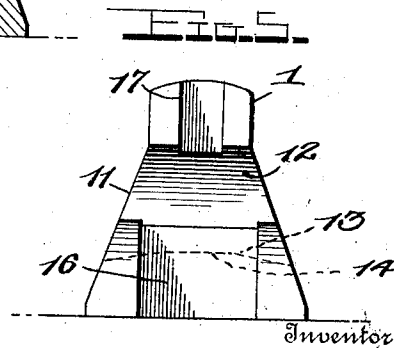
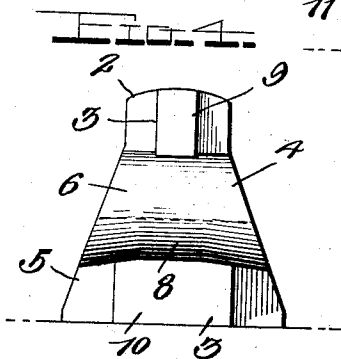
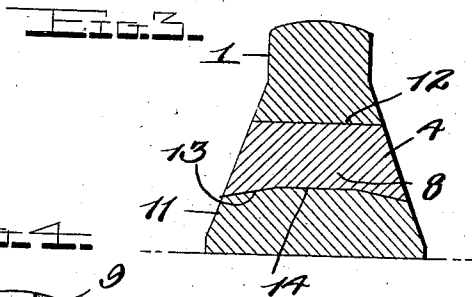
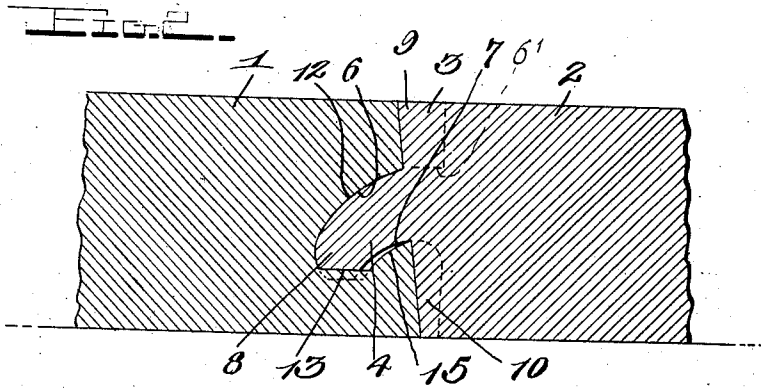
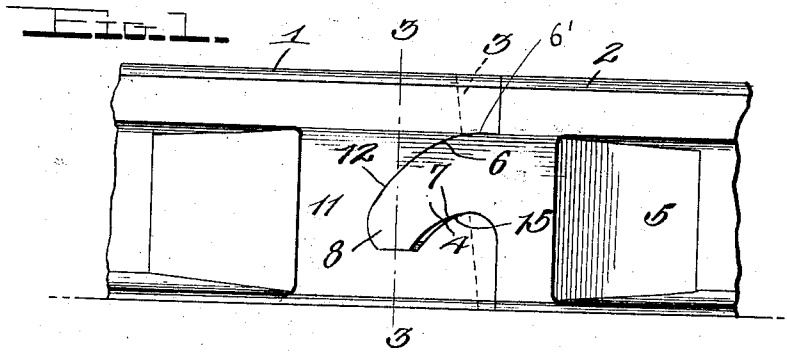


1,058,709.

Patented Apr. 15, 1913.



Witnesses
 Chas. L. Griebauer.
 A. B. Norton.

J. F. Barnhill,
 By Watson E. Coleman,
 Attorney.

UNITED STATES PATENT OFFICE.

JESSE F. BARNHILL, OF DENVER, COLORADO.

INTERLOCKING RAIL-JOINT.

1,058,709.

Specification of Letters Patent.

Patented Apr. 15, 1913.

Application filed March 28, 1912. Serial No. 686,737.

To all whom it may concern:

Be it known that I, JESSE F. BARNHILL, a citizen of the United States, residing at Denver, in the county of Denver and State of Colorado, have invented certain new and useful Improvements in Interlocking Rail-Joints, of which the following is a specification, reference being had to the accompanying drawings.

10 This invention comprehends certain new and useful improvements in rail joints of the rail interlocking type.

The invention has for its primary object an improved construction of rail end, whereby the two ends of the rails may be 15 formed at a relatively low cost, and whereby the ends of the rails will be brought together on a dead level and maintained securely in that position, while at the same time, they are so formed that they need be 20 inclined only to a relatively low angle to the horizontal, in order to permit one end to be disconnected by a sidewise movement from the other.

25 The invention also has for its object a rail joint formed by the ends of the rails whereby a practically continuous tread surface is produced, thereby doing away with the clicking noise which would otherwise be 30 produced by the car wheels striking the ends of the rails in running over the track and the subsequent rounding and battering of the rails.

A further object of the invention is a 35 rail joint which will positively prevent the rails from spreading at the joints, thereby eliminating the liability of the accidents from this cause which are of common occurrence on account of the fish plates and 40 bolts becoming loose from the jar and vibration.

A still further object of the invention is a rail joint which will do away with low joints and will avoid the necessity of using 45 fish plates, bolts, nuts, washers and nut locks at the joints as well as effecting economies in the laying and maintenance of the tracks, as all labor which is ordinarily required to tighten up and replace the fasten- 50 ing devices is done away with.

Another object of the invention is a device of this character by the use of which the jar and vibration produced upon the rolling stock is in a large measure overcome with

the result of saving wear and tear both upon 55 the rolling stock and upon the track.

A further object is the provision of a rail joint which will allow for expansion and contraction, each joint taking care of 60 itself in this regard.

The invention also has for its object a rail joint which is so constructed and arranged that the rail will be practically as strong at the joint as it is in the middle of 65 the rail, the life of the track being appreciably increased and the cost of inspection and repairs greatly reduced as well as the cost of installation, and a further object of the invention is a rail joint in which there 70 will always be at least three contact points in the joint between the two rail ends, whereby a bond is furnished without the use of copper bonding wires, when adapting the rail to electric roads or in the use of electric 75 signaling systems.

With these and other objects in view as will more fully appear as the description proceeds, the invention consists in certain constructions, arrangements and combinations 80 of the parts that I shall hereinafter fully describe and claim.

For a full understanding of the invention reference is to be had to the following description and accompanying drawing, in 85 which—

Figure 1 is a side elevation of a rail joint embodying the improvements of my present invention; Fig. 2 is a longitudinal sectional view thereof; Fig. 3 is a transverse sectional 90 view, the section being taken approximately on the line 3—3 of Fig. 1; and Figs. 4 and 5 are views of the ends of the respective rails at the joints.

Corresponding and like parts are referred to in the following description and designated in the accompanying drawing by the 95 same reference characters.

Referring to the drawings, the numerals 1 and 2 designate portions of the rails, the ends of which are provided with my improved joint adapted for interlocking engagement with each other. The rail 2 is 100 provided in its end with a vertically disposed extension web 3 which extends from the tread surface of the ball of the rail down to and flush with the base thereof, the 105 terminal face of said extension web being inclined to the vertical. This extension web

3 is interrupted by a longitudinally extending locking tongue 4 which is formed as a longitudinal end extension of a thickened web 5, said web being thickened to such an extent at the end of the rail that its side faces at the end will incline gradually from the head of the rail down to the base flanges, as clearly illustrated in the drawing. The locking tongue 4 has its side faces conforming to the inclination of the sides of the thickened web 5 and is curved forwardly and downwardly on both upper and lower surfaces, the upper curved convex surface being designated 6 and the lower concave surface being designated 7. In addition to these longitudinally extending convex and concave surfaces 6 and 7, the free end of the locking tongue 4 is transversely curved upwardly as indicated at 8, whereby the sides of the end project downwardly lower than the middle portion. When looking directly at the end of the rail, it will be noted that the extension web 3, which is interrupted by the tongue 4, embodies a relatively narrow upper portion 9 and a wider portion 10. In looking at the side of the rail, it will be noted that the upper and lower portions of the terminal face of the extension web 3 are in the same oblique plane.

Coming now to the complementary rail 1, it will be seen that this rail is formed at its end with a thickened web portion 11 corresponding to the web 5 of the rail 2, this thickened portion being formed with an inwardly extended curved recess, the upper wall of which, designated 12, corresponds in curvature to the upper convex wall 6 of the tongue 4, while the bottom wall of the recess, designated 13, is transversely rounded as at 14 to fit the transversely curved edge of the tongue 4 and is thence, toward its extremity, longitudinally rounded as at 15 to correspond to the concave lower wall 8 of the tongue 4. The bottom wall of the recess in the web 11 is intersected by a wedge shaped opening 16 corresponding in shape and size to the lower portion 10 of the extension web 3, and the upper wall of the said recess is correspondingly intersected by an opening 17 which is in the head of the rail and which corresponds in shape and size to the upper portion 9 of the extension web 3.

From the foregoing description in connection with the accompanying drawing, it will be understood that when the ends of the rails are fitted together they are upwardly inclined relative to each other, so as to permit the locking tongue 4 to properly enter the recess in the end of the rail 1, the rail ends being then lowered so that the rails will lie horizontally, whereupon the extension web 3 will have its upper portion 9 and its lower portion 10 accurately seated in the upper and lower recesses in the end of the

rail 1. Thus the parts will be securely held together and the rail ends will be prevented from sinking and spreading, as well as from separating in either a lateral or longitudinal direction.

It is to be particularly noted that the locking tongue 4 is slightly less in thickness than the width of the recess into which it fits, whereby provision is made for the contraction and expansion of the rails, while at the same time the rails will always be held together in at least a three point contact whereby the necessity of using bonding wires or the like is avoided. The rails are in nowise weakened by the formation of the recesses to receive the extension web 3 and locking tongue 4, owing to the fact that the main webs are widened at the joint and properly reinforce the parts.

By reference to Figs. 1 and 2 of the drawing, it will be seen that the upper curved surface of the locking tongue 4 terminates at its highest point in a flat horizontal surface 6' on which the adjoining surface of the other rail end rides, whereby the contraction and expansion of the rails is provided for without any liability of sagging.

It will be seen that I have provided a very simple, and useful construction of rail joint, by the use of which the rails may be easily assembled or laid and without the necessity of using fish plates and the fasteners which are ordinarily employed therewith.

Among other advantages possessed by this invention, it may be stated that with this construction, the parts may be easily formed by stamping them with double dies without the necessity of machining the parts and that, owing to the transversely straight surface of the longitudinally curved convex surface 6 of the tongue 4 and the specific formation of the terminal face of the web 3, which is inclined to the vertical, as clearly shown in the drawing, it is only necessary to incline the abutting ends of the rails to a relatively small angle to the horizontal in order to permit one end to be slipped laterally and thus disengaged from an adjoining end.

It is to be understood that while my invention is primarily designed for use as a rail joint, it is equally susceptible of use as a joint in standards, girders, beams or other structural steel or iron work generally.

It will be noted that when the rails are inclined at their abutting ends, the tongue 4 will move out into the larger outer end of the recess of the other rail, thereby permitting the disengagement of one rail from the other by a sidewise movement.

Having thus described my invention I claim:

The combination of the meeting ends of two rails, one of which is formed with a thickened web and at its end with a verti-

cally disposed extension web, the said rail
being provided with a forwardly and down-
wardly curved locking tongue which inter-
sects the extension web intermediate of the
5 upper and lower ends thereof, the upper and
lower portions of the said extension web
lying in the same oblique plane and taper-
ing from the tread surface of the rail to the
base thereof, the upper surface of said
10 tongue being convex in a longitudinal direc-
tion but straight and plane in a transverse
direction, the other meeting end being
formed with a thickened web and a longitu-
dinal recess therein, said recess accommodat-

ing said locking tongue and the upper sur- 15
face of said recess conforming in shape and
curvature to the upper face of said tongue,
the end of the last named rail being formed
in its head and base with recesses in which
the upper and lower ends of the extension 20
web fit.

In testimony whereof I hereunto affix my
signature in the presence of two witnesses.

JESSE F. BARNHILL.

Witnesses:

LILLIE E. PIERCE,
HARRY MCGEE.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."