B. BLAMPIED.

RAIL JOINT.

APPLICATION FILED DEC. 4, 1908.

929,750.

Patented Aug. 3, 1909.

2 SHEETS—SHEET 1.

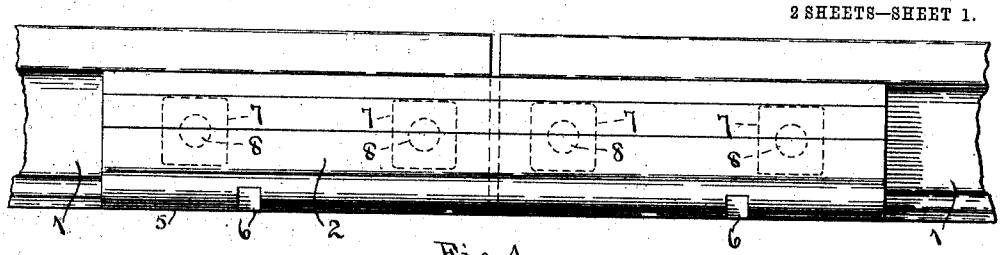

Fig. 1.

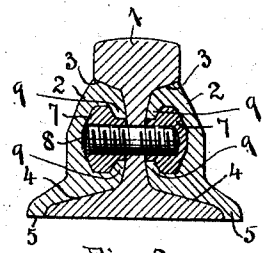

Fig. 2.

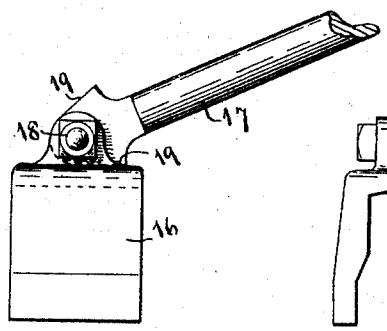

Fig. 3.

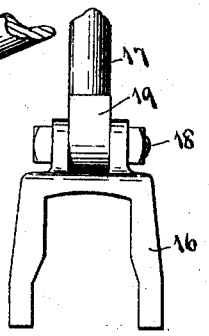

Fig. 4.

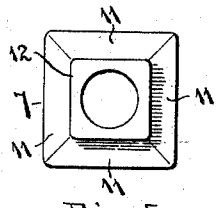

Fig. 5.

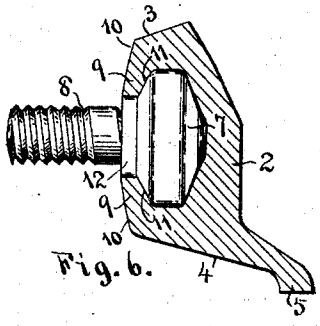

Fig. 6.

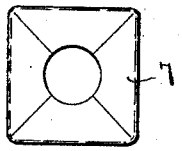

Fig. 7.

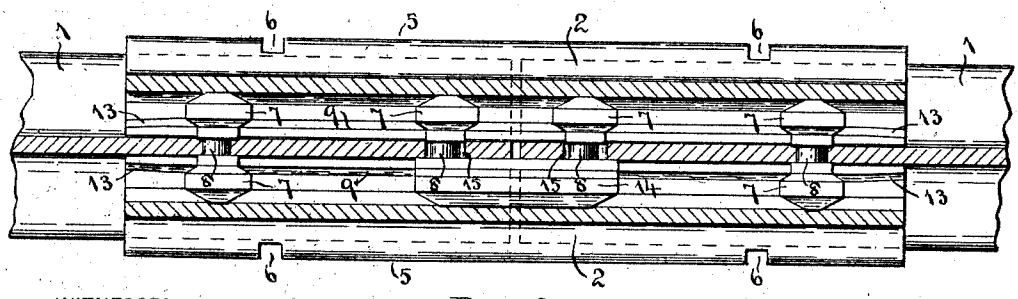

Fig. 8.

WITNESSES:

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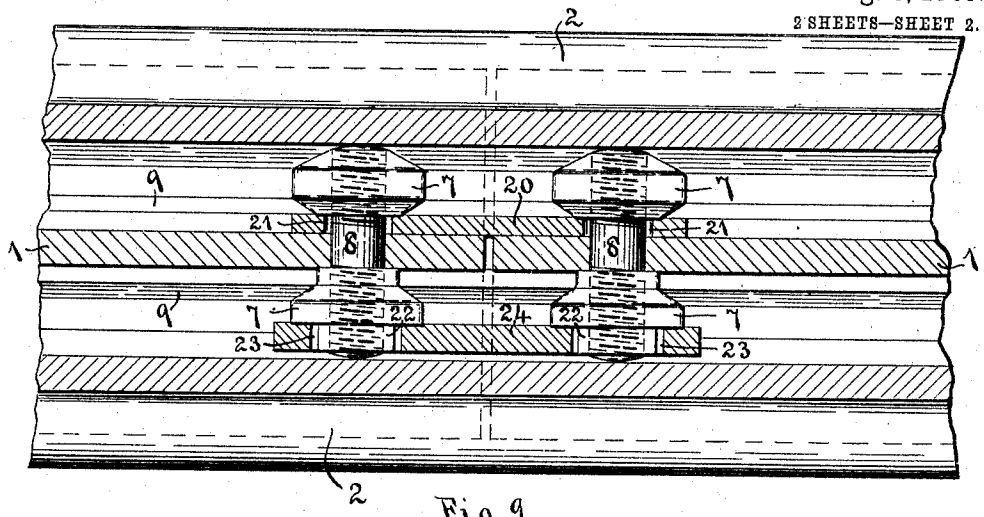

Fig. 9.

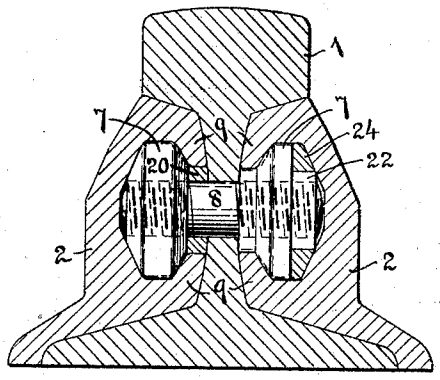

Fig. 10.

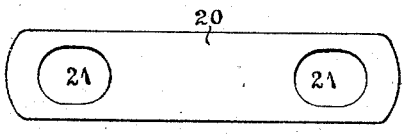

Fig. 11.

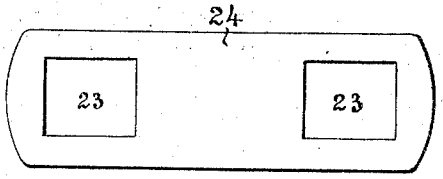

Fig. 12.

WITNESSES:

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Eugene Diven

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UNITED STATES PATENT OFFICE.

BENJAMIN BLAMPIED, OF ELMIRA, NEW YORK.

RAIL-JOINT.

No. 929,750. Specification of Letters Patent. Patented Aug. 3, 1909.

Application filed December 4, 1908. Serial No. 465,908.

To all whom it may concern:

Be it known that I, BENJAMIN BLAMPIED, a citizen of the United States, residing at Elmira, in the county of Chemung and State of New York, have invented certain new and useful Improvements in Rail-Joints, of which the following is a specification.

This invention relates to improvements in the devices whereby the adjacent ends of rails, when laid upon a railway roadbed, are fastened together.

One object of my invention is to provide a device of this nature wherein the joint plates will be so fastened to the rails by concealed means as to securely clamp between opposite plates the head, web, and base of the rail ends to prevent both lateral and vertical motions between the rails at the joint; leaving the rails, however, perfectly free to move longitudinally under expansion and contraction.

A further object is to provide means for securing the joint plates in place without the use of through bolts. And a still further object is to provide means whereby the plates may be readily applied and removed without the manipulation of bolts and nuts; the nuts which I employ being fastened to the rails before the plates are applied, and being held from turning loose by the plates themselves, thereby dispensing with separate nut locks.

I attain my objects by constructing the joint and the members thereof in the manner illustrated in the accompanying drawings, in which—

Figure 1 represents a side elevation of two rail ends united by my improved joint; Fig. 2, a transverse section through the joint and rail at one of the bolt holes; Figs. 3 and 4, side and end elevations of a specially designed hammer, or sledge to be employed in setting up the joint; Fig. 5, a detail on a larger scale, showing an inward end of one of the nuts; Fig. 6, a side view of the nut, and one of the joint plates in transverse section, as applied thereto, a coupling bolt being also shown in connection with the nut; Fig. 7, an outward end elevation of the nut; Fig. 8, a longitudinal transverse section of the entire joint on the line of the bolts; and Figs. 9 to 12, details showing two different forms of coupling devices which can be used in connection with my joint to prevent the rails from drawing too far apart.

Like numerals designate like parts in the several views.

The two end rails 1, 1, after being set in alinement, are fastened together by means of oppositely disposed joint plates, 2, 2, said plates being so formed as to engage the under surface of the head of the rails, as indicated at 3, and the upper surface of the base of the rails, as indicated at 4; the outward edges of the joint plates being turned downward at 5 to engage the outer edges of the rail bases: thereby holding the rails in true alinement when the plates are in place. The plates are provided at suitable points with notches 6, 6, to receive the spikes, by which they are fastened down upon the ties. The rail webs are provided in the usual manner with bolt holes, there being two or more of these bolt holes in each rail; and, on the opposite sides of the webs, are fastened the fastening nuts 7, 7, which are screwed into place upon the bolts 8, which pass through the holes in the rail webs. These nuts, as herein shown, are squared, and are off-set at their inward edges to form a groove between them and the web of the rail, at the upper and lower sides of the nuts. The joint plates are grooved to pass over the nuts, and are provided at 9, 9, with inturned flanges or tongues, which engage the grooves formed between the nuts and the rail webs. As shown in Fig. 6, the inward sides of the joint plates are surfaced at 10 to fit the sides of the rail webs, and the tongues 9 are surfaced at 11 to engage the inward faces of the nuts, these inward faces of the nuts being set away from the rail webs by means of the off-sets 12, formed on the nuts, or in the form of separate washers.

To assemble the joint, the nuts 7 are first screwed up tightly against the webs of the rails on the bolts 8, with their upper and lower edges set parallel to the head and base of the rails. The joint plates are then set up against the web of one of the rails, beyond the bolts, and the tongues 9 are entered into the grooves between the nuts and the web at the first bolt. To facilitate the entry of the tongue into these grooves I may slightly taper the outward ends of the tongues, as shown at 13, in Fig. 8. The

joint plates are then driven along the rail and across the joint between the rails, and onto the next rail, until the tongues have engaged all the nuts, as shown in Fig. 1, where the nuts and bolts are indicated in broken lines. It will be understood that the surface 11 on the tongue 9 will engage the nuts 7 with a driving fit, thereby setting up the surfaces 10, 3, and 4, tightly against the web, head, and base of the rails, respectively; thus firmly securing the ends of the rails between the plates and preventing their lateral or vertical motion between the rail ends relatively to one another. The rails, however, are free to move longitudinally, under the force of expansion and contraction, as the nuts are free to slide longitudinally in the plate grooves.

When once in place the joint plates cannot become loosened, since the nuts are held against turning in the plate grooves, no other nut lock being necessary. Should it become necessary to remove the joint, to replace a rail, or for other purpose, this can be readily and quickly done by simply driving the plates longitudinally along the rails until released from the nuts. No time is required to unscrew the nuts from the bolts; and when replacing the joint, it is only necessary to see that the nuts are in proper position on the rail ends. There are no bolt holes to be brought into alinement, as where the bolts pass completely through the plates and rails. Upon replacing a joint, should it be found that the surfaces 11 on the nuts and plate tongues have become worn, in driving the plates on and off, so as to leave the joints somewhat loose, this looseness may be taken up by loosening the nuts and giving the bolt a quarter turn, and thereafter setting up the nuts, thereby bringing into position fresh surfaces 11, on the nuts, to be engaged by the tongues.

While I have shown the nuts as preferably square in form, they may be hexagonal, or of any other form, provided they have oppositely disposed flattened edges of sufficient extent to prevent them turning in the grooves, and to properly engage the tongues 9 on the joint plates. The grooves in the joint plates will preferably be formed so as to engage closely the nuts on all sides, as shown in Fig. 6, in order to make the joint as tight as possible against lateral motion between the rails. A driving fit, however, is essential between the tongues 9 in the grooves formed between the nuts and the rail webs. The bolts 8 may extend completely through the nuts 7, or only part way through, as shown in the right hand nut in Fig. 2.

Should it be required to couple the rail ends together, so as to render it impossible for said rail ends to move away from one another to too great an extent, I may fasten the nuts on one side of the joint together in one integral plate, as shown at 14 in Fig. 8; the bolt holes in the webs of the rails being in such case elongated, as indicated at 15, to allow for the expansion and contraction of the rails. Other means may also be employed for coupling the rails together. In Figs. 9 to 12, I have shown two different forms of such coupling devices. Thus, I may employ at each joint two coupling plates 20 provided with elongated bolt holes 21, which are placed against each side of the webs of the rail ends so as to span the joint, with the bolts 8 projecting through holes 21. Nuts 7, without the off-sets 12, are then set up into position against the plates 20, and the joint plates 2 driven into place, the plates 20 taking the place of the off-sets. Or, I may employ a pair of plates 24 provided with elongated holes 23, adapted to fit reduced outer ends 22 on nuts 7, the plates 24 being properly shaped to fit the grooves in the joint plates.

For driving the joint plates into place I preferably provide a specially devised hammer, as shown in Figs. 3 and 4, wherein 16 is the hammer head, which is adapted to straddle the head of the rail, and to engage the ends of the plates when set in position against the web of the rail. A handle 17 is coupled to the top of the hammer head by means of a pivot bolt 18, which passes through lugs formed on the top of a head. The handle is inserted between these lugs, and the bolt 18 passes through an eye in the flattened end of the handle. This end of the handle is also provided with projections at opposite sides of the pivot bolts, which engage the upper side of the hammer head, to prevent the hammer from tilting backward when driven up against the ends of the plates. The handle of the hammer may be thrown to either side to accommodate the operator. The inward sides of the hammer are cut out, as shown in Fig. 4, to clear the outward edges of the plate grooves to prevent the bruising of said grooves when driving the plates on or off the nuts. These off-sets also permit the hammer to clear the nuts, when driving the plates off to break the joint. Should, however, the nuts be of a lesser thickness than shown, so as to come within the outer edges of the head of the rail, this off-set in the hammer would not be required. The hammer blows are delivered by sliding the hammer back and forth upon the rail.

The joint plates will be rolled into the shape substantially as herein shown, and the nuts and bolts will be constructed in any desirable manner, to carry out the invention; and I do not limit myself to any particular formation of the parts. The tongues 9 on the joint plates may have the surface 11 set vertically instead of on an incline to engage corresponding surfaces on the nuts, if so

desired. I have shown the inclined surfaces, as being preferable for the purpose of rolling the plates. These inclined surfaces also act as a wedge to force the surfaces 3 and 4 against the head and base of the rails.

The bolts and nuts when placed in the rails do not require to be removed when detaching or replacing the plates. Moreover, these bolts and nuts can be attached to the rails at the mills, if desired, thereby dispensing with the carrying of the bolts and nuts in bulk to the points of construction. The bolts and nuts are protected by the joint plates from the weather, and also from being sheared off in case of derailment, as is frequently the case where the bolts and nuts are exposed. These plates and nuts are adapted to replace the joint devices now in use upon all standard rails; it simply being necessary to remove the old plates and bolts, and fasten my nuts in place by means of bolts passed through the old bolt holes, after which the joint plates properly formed to fit the rail may be driven into place.

What I claim as my invention and desire to secure by Letters Patent is—

1. In a rail joint, the combination, with the rail ends, of joint plates provided with longitudinal grooves opposite the webs of the rails and with tongues at the outward sides of the grooves, and a plurality of nuts bolted to and projecting from the webs on each side, said nuts having portions thereof offset from the webs to form grooves for the reception of the tongues on the plates.

2. In a rail joint, the combination, with the rail ends, of joint plates provided with longitudinal grooves opposite the webs of the rails and with tongues at the outward sides of the grooves, bolts passing through the webs of the rails, and connecting devices removably and adjustably secured by said bolts to the opposite sides of the webs to form grooves for the reception of the tongues on the plates.

3. In a rail joint, the combination with the rail ends, of joint plates provided with longitudinal grooves opposite the webs of the rails and with tongues at the outward sides of the grooves, bolts passing through the webs of the rails, connecting devices removably and adjustably secured by said bolts to the opposite sides of the webs to form grooves for the reception of the tongues on the plates, and a coupling plate or plates uniting adjacent bolts on the rail ends across the joint.

In testimony whereof I have affixed my signature, in presence of two witnesses.

BENJAMIN BLAMPIED.

Witnesses:

M. E. VERBECK,

EUGENE DIVEN.