

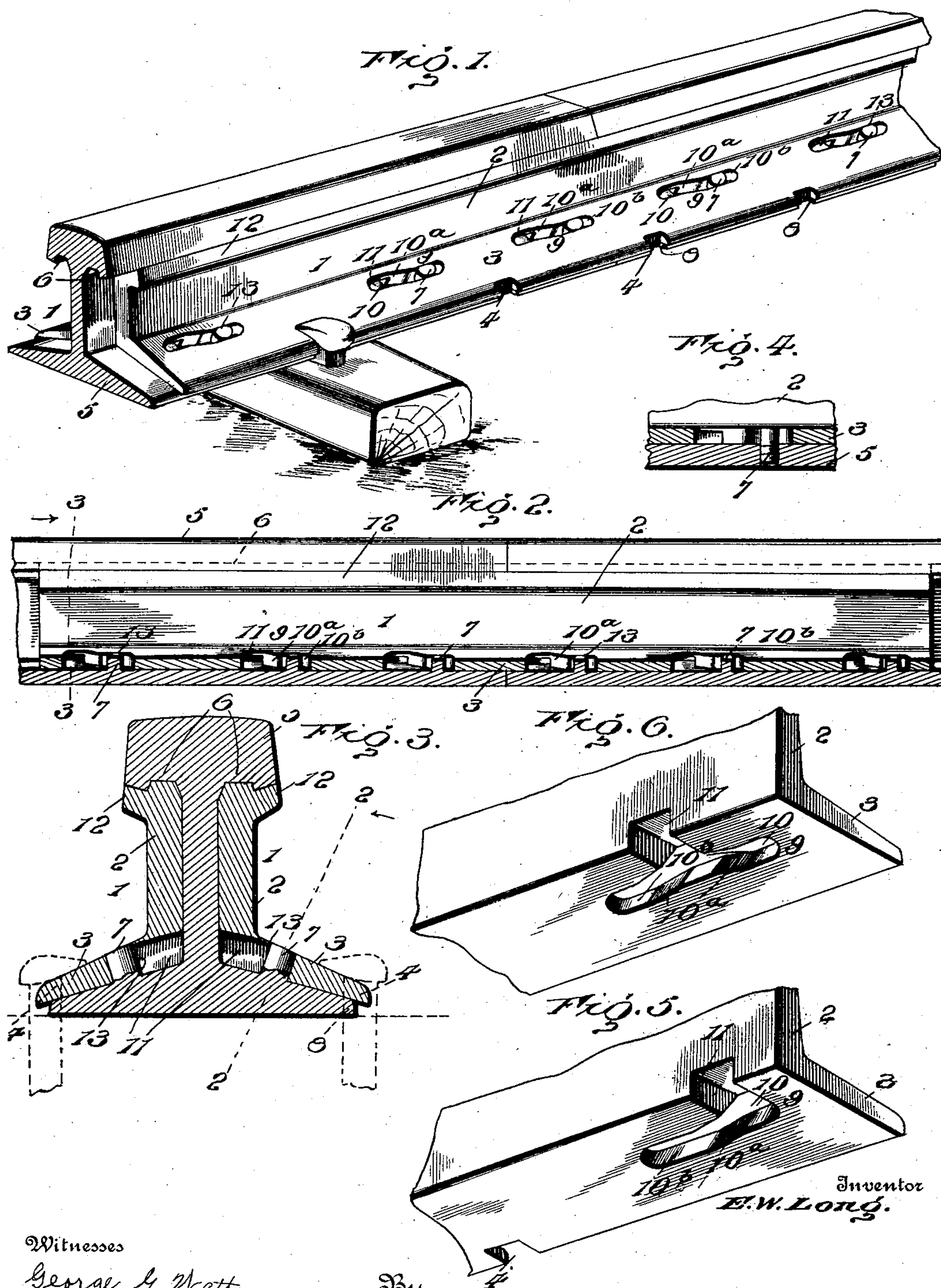
No. 721,712.

PATENTED MAR. 3, 1903.

E. W. LONG.  
RAIL JOINT.

APPLICATION FILED AUG. 5, 1902.

NO. MODEL.





# UNITED STATES PATENT OFFICE.

EMERSON W. LONG, OF CADIZ, OHIO.

## RAIL-JOINT.

SPECIFICATION forming part of Letters Patent No. 721,712, dated March 3, 1903.

Application filed August 5, 1902. Serial No. 118,534. (No model.)

*To all whom it may concern:*

Be it known that I, EMERSON W. LONG, a citizen of the United States, residing at Cadiz, in the county of Harrison and State of Ohio, have invented certain new and useful Improvements in Rail-Joints, of which the following is a specification.

This invention relates to new and novel improvements in the construction of angle-bars or fish-plates for rails, the essential object of same being to secure a cheap, more rigid, and, generally speaking, a more practical connection than any now in use.

A further object is to provide a structure which does away with the use of bolts and the consequent formation of holes in the end portions of the rails and fish-plates, thereby acquiring an important advantage over the connections now generally adopted.

The invention is adapted to be quickly placed in position and possesses apparent advantages, which will be more fully pointed out hereinafter and finally claimed.

For a full description 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 drawings hereto attached.

While the essential and characteristic features of the invention are susceptible of modification, still the preferred embodiment of the invention is illustrated in the accompanying drawings, in which—

Figure 1 is a perspective view. Fig. 2 is a longitudinal section on the line 2 2 of Fig. 3. Fig. 3 is a vertical section on the line 3 3 of Fig. 2. Fig. 4 is a detail view showing stud screwed into the rail. Fig. 5 is a detail under side view of the angle-bar, showing the slot. Fig. 6 is a similar view showing a modified form of the slot.

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.

The general form of the angle-bar 1 is of ordinary construction, embodying the usual vertical and horizontal wings 2 and 3, respectively. The notches 4 upon the outer edge of the horizontal wing 3 are those commonly employed to receive the spikes used in secur-

ing the rails, being approximately of the same width as the said spikes to snugly receive the latter. The rails 5 are formed with grooves 6 upon and extending the entire length of the under sides of the lateral extensions of the head for purposes hereinafter to be described. Stud 7 also are projected from the upper side of the basal portion of the rail. These studs may be formed driven into the rail in the operation of rolling while same is still hot or may be screwed into threaded holes therein. The former construction, however, is preferred, since the studs are designed to be permanently fixed in their position. Notches 8, corresponding to those upon the angle-bar, are also disposed at intervals upon the edge portion of the base of the rails, these notches being of greater width than the former to allow of contraction and expansion of the rails.

Located upon the under surface of the horizontal wing 3 of the angle-bar 1 are L-shaped slots 9, which in assembling the structure to place the angle-bars in position cooperate with the studs 7 upon the rails. The longitudinal element of the slots 9, numbered 10, inclines a portion of its length, as shown at 10<sup>a</sup>, thereafter extending parallel with the edge of the bar, the latter part being designated 10<sup>b</sup>. The transverse element 11 of the slot 9 extends approximately at right angles to the part 10 through the inner edge of the vertical wing 2 of the angle-bar. This element 11 is made of slightly-greater width than the portion 10, so as to readily receive the studs 7. The angle-bars are of exactly the same construction and may be interchanged, so as to be used upon either side of the rail. An outer shoulder 12 at the upper edge of the vertical wing of the angle-bar is adapted to bear against the side tread portion of the rail, and thus gives a great rigidity to the structure. It is contemplated, however, only to use this latter feature upon the larger and heavier rails.

In applying the invention the rail ends are brought together in the usual manner. The upper edge of the vertical wing of the angle-bar is then inserted into the grooves 6, and the transverse element 11 of the slot 9 registering with the studs 7 upon exercise of pressure the bar is forced against the sides of the



rail. Upon endwise movement of the angle-bar, accomplished by a few blows of a sledge or like tool, the incline  $10^a$  of the slot element 10 causes the angle-bar to exert both a lateral pressure against the side and an upward pressure against the under side of the rail, due to the wedging action of the said movement. The side of the studs 7 facing the rail is flattened, as shown at 13, to augment the wedging action above described, reducing the friction of parts. The part  $10^b$  of the slot 9 allows for expansion of the rails without any relaxation of the pressure upon the same, as will be readily understood.

The slots 9 need not necessarily be of L form, but may have the transverse element 11 thereof disposed centrally or otherwise with relation to the part 10 within the spirit of the invention and claims. (Refer to modified form in the drawings.)

It will be noted that the construction of angle-bar shown herein may be applied at any point upon the rails, and should the rail be broken from accident or otherwise it will be easily seen that this is a point of great advantage.

I am not limited to the exact construction and formation of parts as herein described, but may modify same according to the spirit and substance of the appended claims.

By utilization of this invention a rail can readily be removed from any point in the track without disturbing those remaining, and in making temporary connections rails can be held firmly by the angle-bars and spikes alone. In applying the device to metal ties the principle would be the same, for by omitting the studs bolts may be substituted to cooperate either with the slots or with openings in the angle-bar and the base of the rail.

In using the form of slot shown in the modification Fig. 6 the inclined longitudinal elements of the slots may be given a slightly-different pitch, and in case of wear of the studs the angle-bar may be driven in a reverse direction, thus insuring the firmness and rigidity of the joint. As regards the above feature the spike-notches in the angle-bar should be arranged to be in line with the notches upon the rail when either end of the modified construction of slot is used.

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

1. In a rail-joint, the combination with the rails, and studs projected upward from the

basal flanges thereof, of angle-bars arranged upon opposite sides of the rails and having longitudinal slots in their horizontal wings to receive the said studs, said longitudinal slots being inclined to cooperate with the studs to effect a lateral shifting of the angle-bars simultaneously with an endwise movement thereof, substantially as described.

2. In a rail-joint, the combination with the rails, and studs projected upward from the basal flanges thereof, of angle-bars arranged upon opposite sides of the rails and having longitudinal slots in their horizontal wings to receive the said studs, said longitudinal slots being inclined to cooperate with the studs to effect a lateral shifting of the angle-bars simultaneously with an endwise movement thereof, and passages leading from the slots through the inner edges of the said horizontal wings to admit of free ingress and egress of the studs, substantially as described.

3. In a rail-joint, the combination with the rails, and studs projected upward from the basal flanges thereof, of angle-bars arranged upon opposite sides of the rails, having the upper edges of their vertical wings interlocked with the head of the rails, and having longitudinal slots in their horizontal wings to receive the said studs, said longitudinal slots being inclined to cooperate with the studs to effect a lateral shifting of the angle-bars simultaneously with an endwise movement thereof, substantially as described.

4. In a rail-joint, the combination of the rails having grooves in the under sides of the lateral extensions of the head thereof, studs projected upward from their basal flanges, angle-bars arranged upon opposite sides of the rails with the upper edges of their vertical wings seated in the grooves of the lateral extensions of the head and having L-shaped slots in their horizontal wings, the longitudinal element of the L-slots being inclined and the transverse element extending through the inner edge of the horizontal wing, and an outer shoulder near the upper edge of the vertical wing to come under the head of the rails exterior to the grooves therein, substantially as described.

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

EMERSON W. LONG. [L. S.]

Witnesses:

D. A. HOLLINGSWORTH,  
THOMAS A. SCOTT.