E. F. KENNEY.

RAIL JOINT.

APPLICATION FILED MAR. 6, 1911.

1,114,005. Patented Oct. 20, 1914.

Fig. 1.

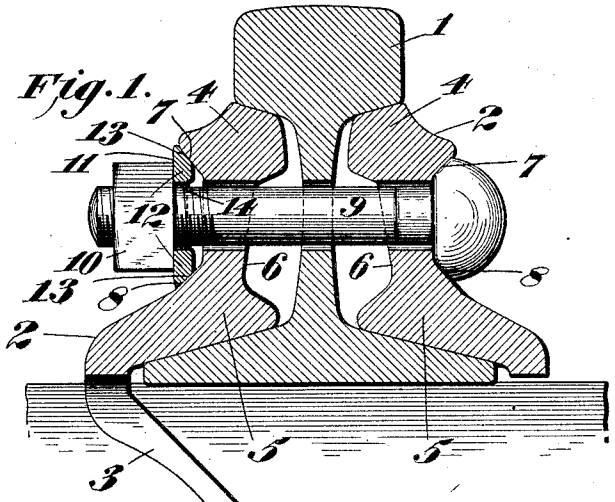


Fig. 2.

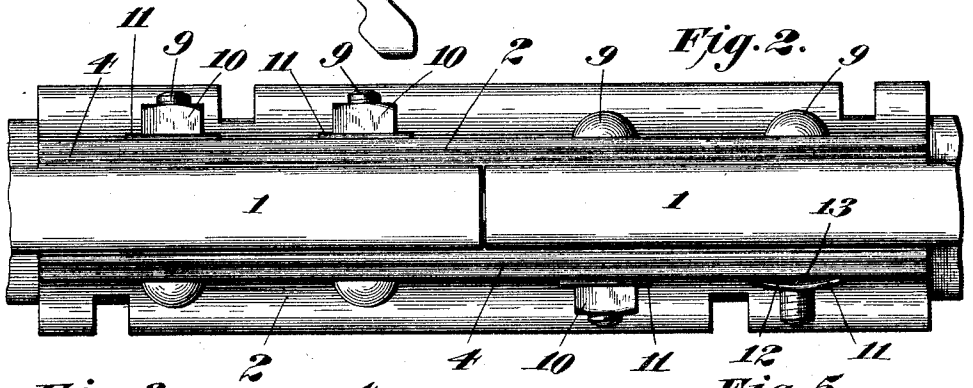


Fig. 3.

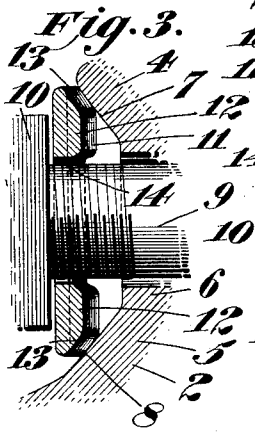


Fig. 4.

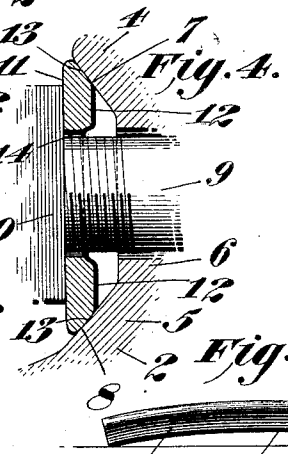


Fig. 5.

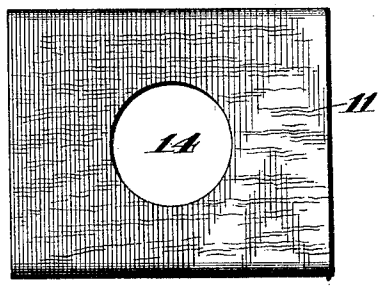
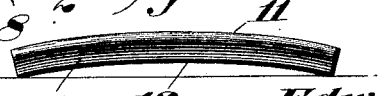


Fig. 6.



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RAIL-JOINT.

1,114,005. Specification of Letters Patent. Patented Oct. 20, 1914.

Application filed March 6, 1911. Serial No. 612,441.

To all whom it may concern:

Be it known that I, EDWARD F. KENNEY, a citizen of the United States, residing in the borough of Westmont, in the county of Cambria and State of Pennsylvania, have invented certain new and useful Improvements in Rail-Joints; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to certain improvements in rail-joints for use in connecting the adjoining ends of railway track rails and refers particularly to means for maintaining the splice-bars and the fastening appliances therefor, in proper position.

Referring now to the annexed sheet of drawings which forms part of this specification and in which like figures refer to like parts: Figure 1 is a transverse sectional elevation of a rail-splice showing my improvement, and Fig. 2 is a plan view of the same. Fig. 3 is an enlarged cross sectional elevation showing my improved spring-washer in position before the nut of the splice-bolt is screwed down on the same, and Fig. 4 is a similar cross sectional elevation after the nut of the splice-bolt has been screwed home to a bearing. Fig. 5 is a front view of my improved spring-washer, the slightly wavy horizontal lines on the same being intended to diagrammatically represent the fibers thereof, although the same are not normally visible. Fig. 6 is a side view of my improved spring-washer represented as lying on a plane indicated by the straight line for the purpose of indicating the curvature of said washer.

Referring now to the characters of reference on the drawings—the railway-rail, shown in this case as of T-section, is indicated as 1, although other sections may be used.

The right-hand splice-bar in Fig. 1, indicated as 2 is known as an angle-splice, while the left-hand splice-bar is shown with a lower depending flange 3. I have indicated two forms of splice-bars in connection with my invention, for the reason that both of these, or any similar styles may be used in connection therewith.

The heads of the splice-bars, the upper surfaces of which contact with the lower surfaces of the rail heads, are indicated as 4; the lower flanges which contact with the upper portions of the rail flanges are indicated as 5, while the webs connecting the heads and flanges of the splice-bars are indicated as 6. The exterior surfaces of the flanges 6 are indicated as approximately vertical when in operative position and the splice-bars are made with projecting surfaces or inclines 7 and 8 which therefore form a groove, with outwardly flaring edges, extending longitudinally of the exterior of each of the splice-bars.

The splice-bolt is indicated as 9, having a head and a threaded end provided with a nut 10. Between the nut 10 and the adjoining surface of the flaring or trapezoidal groove in the splice-bar, I insert my special form of spring-washer indicated as 11, which is provided at its edges with projecting ribs 12 formed integral therewith and having beveled edges 13 to correspond and contact with the inclined surfaces 7 and 8 of the grooves of the splice-bars. This construction helps hold the spring-washer in position and provides a bearing for the edge ribs thereof. The central hole in my improved spring-washer is indicated as 14.

As shown in the drawings the integral ribs 12 are of approximately trapezoidal section, but I may make these of any form to suit the splice-bars, as will be readily understood.

My special form of spring-washer as shown in the various figures is preferably formed from a long bar of spring steel which is rolled longitudinally in the direction of the wavy lines indicated in Fig. 5, the longitudinal ribs 12 being formed at this stage of the operation. After this, the bar is preferably cut into shorter washer lengths, a hole punched in the center of each, the curvature given, and the washers are then hardened or tempered, if desired.

Steel, after being cast and allowed to cool, is of a comparatively coarse crystalline structure, and as the blooms or billets are rolled into a bar of the section of my spring-washer, the crystals become somewhat elongated, producing what might be termed as a longitudinally fibrous structure, or one approaching this. The major planes or surfaces of cleavage, if any, are therefore naturally longitudinal of the rolling, and I have discovered by actual trial and experiment with various styles of spring-washers, that the one which is curved or bowed in the direction of the fibers, is more resilient

and efficient by reason thereof. As my spring-washer is bowed or bent in the direction of the fibers, it possesses the peculiar advantages just mentioned. I have also discovered that a flat plate washer is not one adapted for use in connection with splice-bars of the character shown herein, as its edges would not properly fit against the beveled surfaces of the groove in the splice-bar, besides which, a considerable thickness of washer is needed, particularly at the edges, to provide bearing surfaces and at the same time give the necessary strength and resiliency. I make the intermediate portion of my washer, thin, in order that it shall not be too stiff, and thereby provide for punching the same without cracking or distorting the metal. My washer, when used with the style of splice-bar shown, also serves as a bridge-piece or filler to close the groove around the bolt-holes, and provides a proper and sufficient bearing for a flat nut.

In using my washer it is placed over the track-bolt in the position indicated at the right-hand of Fig. 2 and in Fig. 3; the nut is then screwed on and the washer brought down until it has an approximately flat exterior surface, the beveled edges of same then resting securely and bearing firmly on the flaring edges of the corresponding grooves in the splice-bar as shown in Figs. 1 and 4. The elastic reaction or resiliency of the washer causes it to maintain the nut 10 in tight position on the bolt 9 at all times, notwithstanding the jars and impacts of traffic, with the result that the splice-bars are held in firm contact with the rails, and therefore perform their functions properly. Another advantage of my improved form of spring-washer is, that should the nut, for any reason, become loose, the track-walker or inspector can readily see the fact, without stooping down for critical examination, as the opening or gap between said washer and the adjoining splice-bar can be easily seen, as indicated at the right hand of Fig. 2, and this is not the case with other forms. I may also form my improved spring-washer with integral ribs projecting from its outer surface, if desired, as this is included within the scope and spirit of my invention.

Although I have shown and described my improvements in considerable detail, I do not wish to be limited to the exact and specific details shown and described, but may use such substitutions, modifications or equivalents thereof, as are embraced within the scope of my invention, as pointed out in the claim.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:—

A spring-washer, comprising a central plate portion with integral thickened ribs of substantially trapezoidal section on two opposite edges thereof, said washer being provided with a central bolt opening and bowed in the direction of its fibers and of the ribs aforesaid.

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

EDWARD F. KENNEY.

Witnesses:

ELMER SEAVEY,

ROBERT A. BEERS.

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