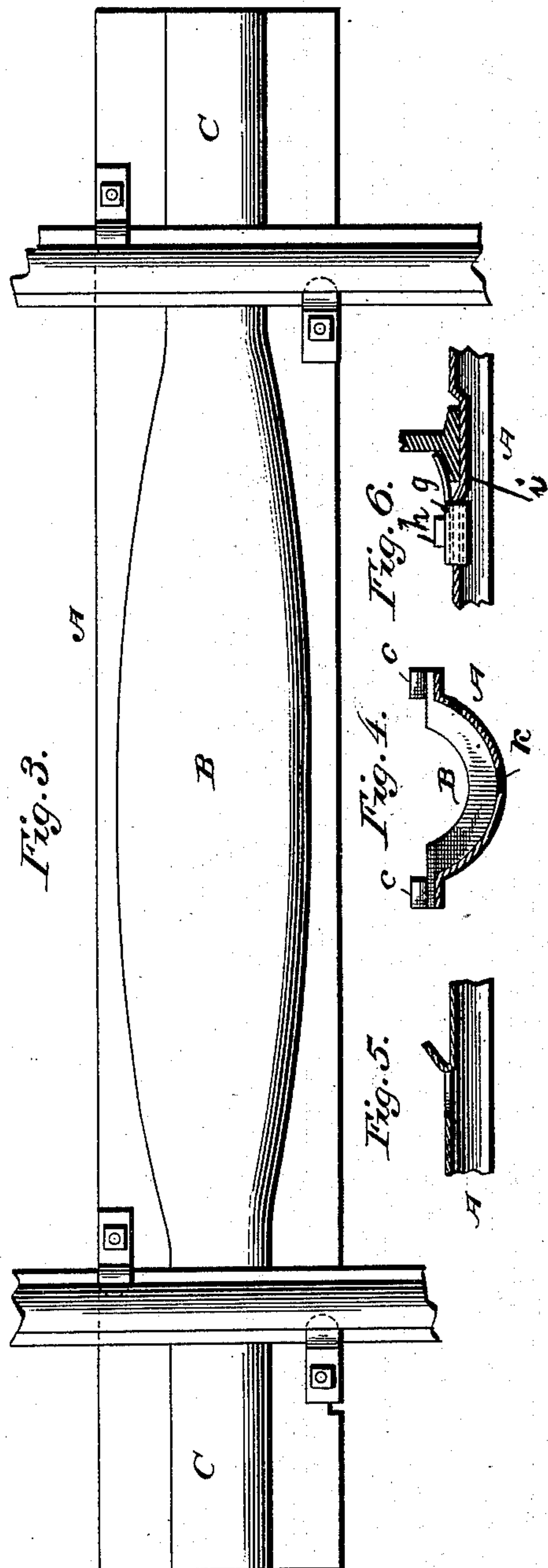


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UNITED STATES PATENT OFFICE.

JOHN R. MCCARTEY, OF KENDALL CREEK, PENNSYLVANIA.

RAILWAY-TIE.

SPECIFICATION forming part of Letters Patent No. 410,176, dated September 3, 1889.

Application filed March 20, 1889. Serial No. 303,988. (No model.)

To all whom it may concern:

Be it known that I, JOHN R. MCCARTEY, a citizen of the United States, residing at Kendall Creek, in the county of McKean and State of Pennsylvania, have invented certain new and useful Improvements in Railway-Ties; and I do 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.

This invention relates to railway-ties, the objects of the invention being to simplify the construction of metallic ties, to provide a tie which shall possess a maximum amount of strength with a minimum amount of metal, and a tie wherein the greatest strength shall be at the longitudinal center, one which shall have an extensive bearing, and one which will be prevented from undue sinking in the ballast, as well as providing ready and efficient means for firmly securing the rails in position. I accomplish these several objects by the devices shown and illustrated in the accompanying drawings, in which—

Figure 1 is a plan view of a tie constructed in accordance with the terms of my invention. Fig. 2 is a central longitudinal sectional view taken on the line *xx* of Fig. 1. Fig. 3 is a plan view of a modified construction. Fig. 4 is a cross-sectional view taken in the line *yy* of Fig. 1. Fig. 5 is a detail view representing the arrangement of one of the permanent retaining-clips. Fig. 6 is a similar view illustrating the construction and arrangement of one of the detachable retaining-clips. Fig. 7 is a transverse section through the center of a modification of the tie.

In manufacturing ties such as those forming the subject-matter of this application I take a thin metallic plate, preferably of iron or steel, and in the upper face of this plate I form a concave groove, the central portion of which is elliptical, the inner axis of the ellipse being at the longitudinal center of the tie; but the edges of the ends of the grooves are parallel from a short distance within the points at which the rails are disposed to the ends of the tie, these end portions of the groove being also of equal depth, while the central elliptical portion of the groove gradually increases in depth from each end portion to the longitudinal center of the tie, as will be readily

understood from the drawings hereto annexed, in which A represents the plate, B the central elliptical portion of the concave groove, and C the end portions, which end portions, as before stated, are of equal width and depth throughout their entire length.

At one end of the tie there are formed two L-shaped cuts, as *a* and *b*, and the ears *c*, formed by said cuts, are bent up, as illustrated in Fig. 5, becoming when so bent retaining-clips, by which the rail is held to the tie, the lines upon which the two clips or ears are bent corresponding with the lines between which it is desired to support the base of the rail. Near the opposite end of the tie there is a third L-shaped cut *d*, that is made to form a third clip or ear *e*, and in the opposite edge of the tie there is formed a recess *f*, in which there is mounted a detachable clip *g*, said clip being formed with an underlapping flange, which fits beneath the tie, the clip proper being held to the tie by a bolt *h*. If desired, transverse grooves *i* may be formed in the upper faces of the ties for the reception of the bases of the rails; but such grooves would not always be necessary, the peculiar formation of the clips *e e* and the connection of the clip *g*, which rests within the recess *f*, preventing the spreading of the rails. In applying such a tie as the one illustrated in Figs. 1 and 2 and just described the tie would be turned at an angle, so as to permit the base of the rail to enter the space between the clips *c*. Then the tie would be turned so as to extend at right angles from the rail, the clips embracing the base of the rail, the clip *e* moving to position above the base of the opposite rail, after which the clip is applied as illustrated. In certain instances all of the retaining-clips might be similar to the clip *g*, as is shown in Fig. 3. If desired, an aperture *k* could be formed at the center of the tie to provide for a proper drainage.

From the construction described it will be seen that the broadest part of the elliptical groove is at the center of the tie, and hence the greatest amount of strength will be at said central point, and as the outer walls of the groove slope inward from the center toward the ends the tie when ballasted will be held against lateral displacement.

As an additional means of securely seating

the tie and preventing the same from unduly sinking in the ballast, I contemplate providing the longitudinal edges of the tie with outwardly and downwardly extending flanges *l*.

- 5 These flanges depend from the rail-seat *m*, and, entering the road-bed, prevent any lateral or longitudinal displacement of the tie.

It is obvious that the clips *c* may be formed on ties such as shown in Fig. 13, as well as
10 upon those in which the anchor-flanges *l* are omitted.

Having described my invention, what I claim is—

1. A railway-tie consisting, essentially, of a
15 metallic plate formed in its upper side with a longitudinal groove the central portion of which is elliptical.

2. A railway-tie formed in its upper side with a longitudinal groove that increases in
20 width toward the center of the tie, substantially as specified.

3. A railway-tie formed in its upper side with a longitudinal concave groove and with retaining-clips, in combination with a retain-
25 ing-clip *g*, substantially as described.

4. A railway-tie formed with transverse grooves *i* and a longitudinal concave groove which gradually increases in breadth and depth toward the center of the tie from points just within the transverse grooves, substan- 30 tially as described.

5. A railway-tie formed throughout its length with a longitudinal groove that increases in width toward the center of the tie, and having its longitudinal edges terminat- 35 ing in anchoring - flanges, substantially as specified.

6. A railway-tie formed in its upper side with a longitudinal groove that increases in width toward the center of the tie, and hav- 40 ing the rail-seating surface provided with fastening devices and its longitudinal edges turned outwardly and downwardly, substantially as specified.

In testimony whereof I affix my signature in 45 presence of two witnesses.

JOHN R. McCARTEY.

Witnesses:

JAMES GEORGE,
E. M. KETCHAM.