

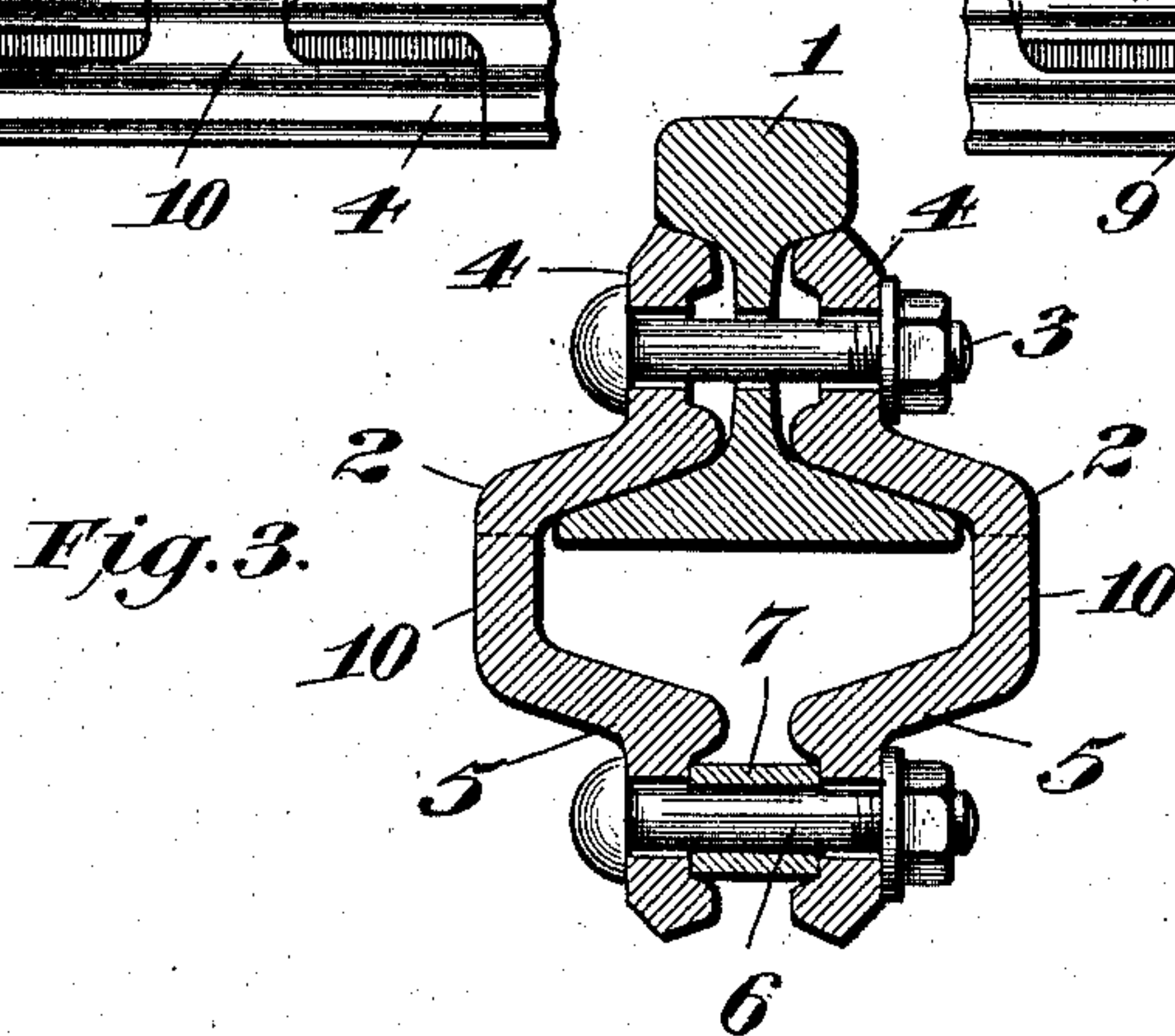
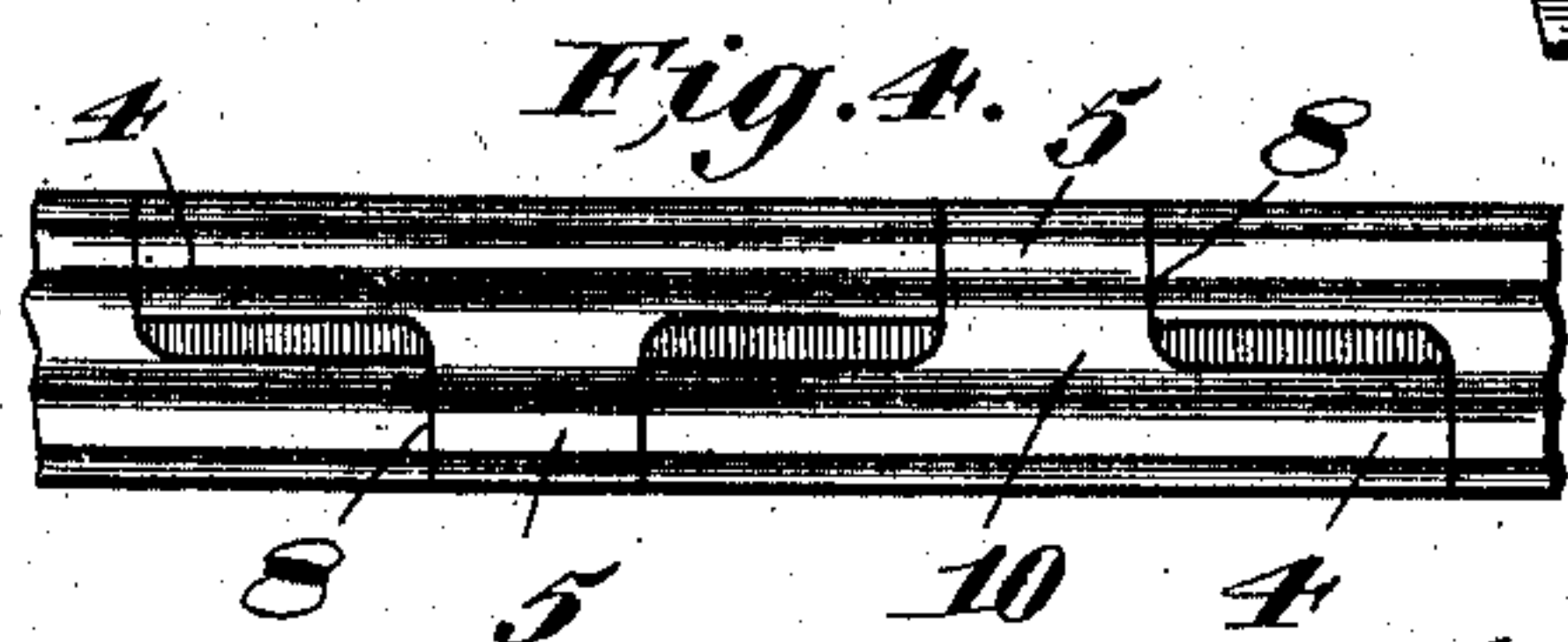
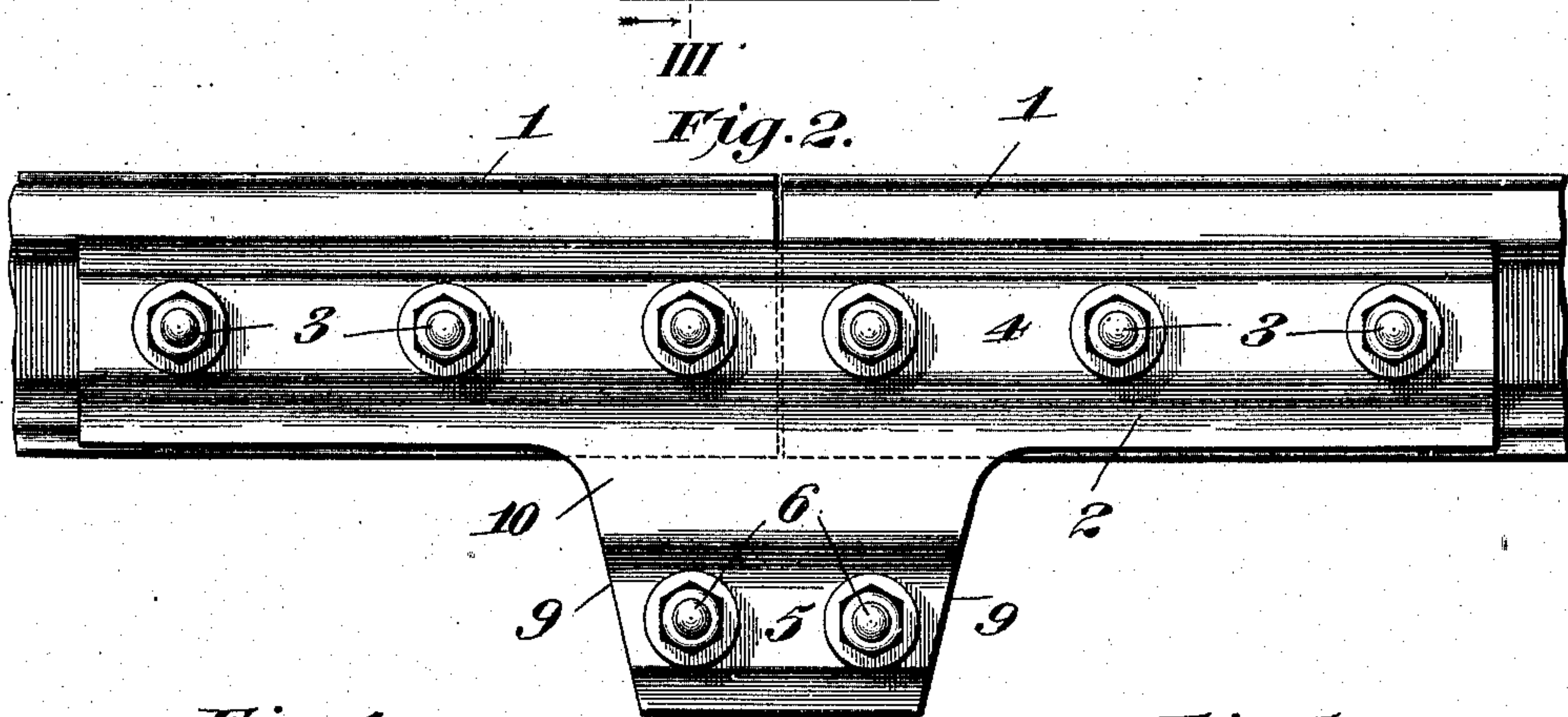
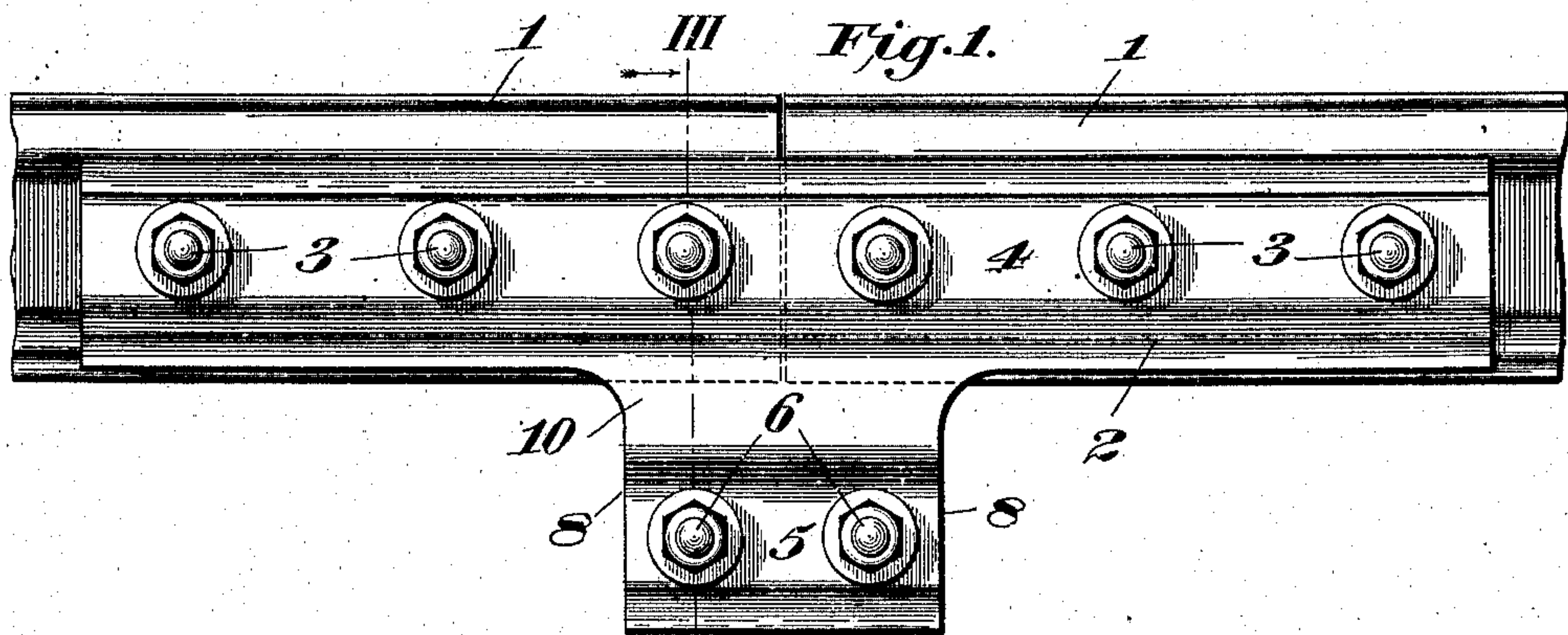
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PATENTED NOV. 27, 1906.

R. V. SAGE & G. E. THACKRAY.

SPLICE BAR.

APPLICATION FILED MAY 15, 1905.



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UNITED STATES PATENT OFFICE.

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SPLICE-BAR.

No. 836,831.

Specification of Letters Patent.

Patented Nov. 27, 1906.

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To all whom it may concern:

Be it known that we, RALPH V. SAGE and GEORGE E. THACKRAY, citizens 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 Splice-Bars; and we 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.

Our invention relates to girder splice-bars for uniting and supporting the ends of railway-rails, and more particularly to such as have a reinforcing member or depending flange which extends below the base of the rail when in position.

It has for its object to provide a girder splice-bar having such a reinforcing member which is substantially the same in cross-section as the splice member, whereby each may be cut alternately, with practically no waste, from opposite sides of a stock-bar symmetrical in cross-section, thus effecting a considerable saving in the amount of material required and in the cost of manufacture.

The most efficient splice has a strength equal to or slightly greater than the continuous rail and an elasticity about the same, and we provide such a splice with the least practicable amount of metal by making splice-bars having reinforcing members opposite the joint, which extend below the flange of the rail. Take, for example, a splice for a one-hundred-pound rail. Each of our bars has a section modulus of about eight and one-half or a total of seventeen for both bars when in position. Making a slight allowance for the punched holes and the softer character of the material in the splice-bars, as compared with the harder steel in the rails, this would make them equivalent in strength to a standard one-hundred-pound rail, the section modulus of which is about fifteen.

Heretofore the depending or reinforcing members have been made of a different cross-section from that of the splice member; but as they are usually of rolled shapes considerable difficulty is experienced in rolling and in straightening such unsymmetrical stock-bars, as they are troublesome to roll on account of the side draft, besides which they

are distorted by cooling. The reinforcing members have also generally been made of length equal to or shorter than the space between the ties, which requires that the largest part of the lower portion of the stock-bar be cut away, with consequent loss as scrap, and for all of these reasons such splice-bars have consequently been expensive in manufacture.

In the manufacture of our splice-bar all of the objectionable features above referred to are avoided, as our stock-bar is made symmetrical in cross-section with respect to its central longitudinal plane, making a shape which is cheaply and easily rolled, without side draft or drag on the rolling-mill guides or grooves, and which upon cooling does not become distorted, thus requiring little or no straightening. Our stock-bar is also of convenient and proper section for shearing the splice-bars alternately and reversely from opposite sides thereof, thereby effecting a saving in material.

An embodiment of our invention is shown in the accompanying sheet of drawings, in which like characters of reference designate like parts.

Referring to the drawings, Figure 1 is a side elevation of a rail-joint, showing the preferred form of our improved splice-bar in position. Fig. 2 is a view corresponding to Fig. 1, showing a modified form of the same. Fig. 3 is a transverse sectional elevation taken on planes indicated by the broken line III-III of Fig. 1, showing the cross-section of the splice-bar and the manner of assembling a pair of them at a rail-joint. Fig. 4 is a plan view of a stock-bar, showing the manner of cutting the preferred form of splice-bar therefrom. Fig. 5 is a view corresponding to Fig. 4, showing the manner of cutting the modified form.

In the drawings, 1 designates the ends of adjacent rails, which are united and supported in the usual manner by the girder splice-bars 2 and the track-bolts 3. Each of these splice-bars comprises a splice member 4 and a reinforcing member 5, which latter extends below the former, is located opposite the joint of the rails and preferably equidistant from the ends. The reinforcing members are designed to be secured together, as by bolts 6, the separator-blocks 7 serving to space them a proper distance apart, whereby the usual track-bolts are assisted in holding

the splice members firmly in contact with both the head and the flange of the rail. By these means a strong noiseless splice is provided which still has the required elasticity.

5 If greater elasticity is desired, the bolts 6 and their separator-blocks may be omitted without impairing the strength of the joint or departing from our invention. The reinforcing members 5 also serve to prevent the creeping
10 of the rails by placing one or the other of their edges so that they abut against the tie, or, if so desired, they may be made of such a length as will fill the space between the adjacent ties. When it is the intention to
15 utilize the reinforcing member for this purpose, the edges thereof are preferably made at right angles to the splice member, as shown at 8. Otherwise the preferable construction is as shown at 9, where the edges
20 form an obtuse angle with the splice member, making a wider base and reducing the stresses in the reentrant angles, whereby a stronger structure is produced with substantially the same amount of material. The re-
25 entrant angles are also formed with round corners to strengthen the structure.

In order to reduce the cost of manufacture, we make the reinforcing member of substantially the same cross-section as the splice
30 member, thus rendering the stock-bar symmetrical in cross-section, whereby it is more cheaply and easily rolled and remains straight upon cooling.

The manner of shearing our splice-bars from the stock-bar and the consequent economy of work and material resulting from the shape and arrangement thereof are shown in
35 Figs. 4 and 5, the former applying to the form shown in Fig. 1 and the latter to the form shown in Fig. 2. It may be stated that the ends of the form shown in Fig. 2 may be left oblique, as shown in Fig. 5, or they may be cut square, as indicated by dotted lines.
40 In order to provide space for the blades of the shears, the stock-bar is made with a centrally-located plane web 10. This web may be wide enough in proportion to the thickness of the blade of the shear to permit the cut to be made in the middle thereof; but
45 preferably it is of a width (shown in the drawings) which requires a primary cut to be made on one side thereof and two secondary cuts on the opposite side, thereby cutting away a small part indicated by the shaded
50 portions of Figs. 4 and 5. The flat surface or central web 10, extending vertically below the rail-flange, is also of service in rolling the section, as it can thus be produced by the tongues on the ordinary rolls without undue
55 wear, as these tongues can be made of a reasonable width, thus reducing the intensity of the friction and pressure on the same.

From the above description the advantages of our invention will readily be seen. A
60 splice-bar is formed which is exceptionally

strong in proportion to its weight and yet has the desired elasticity, due to the proper distribution of the metal. It is also very cheap to manufacture, since it is cut directly from a stock-bar without further operations upon
70 it except the punching of the holes for the bolts and with little or no waste material. The stock-bar itself is more easily produced in consequence of its symmetrical cross-section, making it easier to roll and requiring
75 no straightening after cooling.

As heretofore stated, we may omit the bolts 6 and the separator-blocks 7 in case a more yielding joint or one of greater elasticity is desired, and we may also make these separator-blocks 7 of yielding material—such as
80 wood, fiber, metallic springs, or other construction—such as to permit the splice-bar to be adjusted or drawn together by the bolts to insure a good fit and position desired.
85

A number of modifications of the invention will readily suggest themselves to one skilled in this art. Hence it is not the desire to limit this application to the precise forms shown therein, but to have it construed as broadly
90 as the invention merits.

What we claim as new, and desire to secure by Letters Patent, is—

1. A splice-bar for railway-rails having a splice member and a shorter depending reinforcing member symmetrical therewith in
95 cross-section and united thereto by a plane web.

2. In a splice for railway-rails, the combination with the rails, of splice-bars having
100 splice members and shorter reinforcing members of substantially symmetrical cross-sections, a separator-block between and abutting the reinforcing members only and means for securing said splice-bars together.
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3. A flanged metal bar symmetrical in cross-section, from the opposite sides of which are alternately cut the splice member and the shorter reinforcing member of a
110 splice-bar.

4. A splice-bar for railway-rails comprising a splice portion of angle-section fitting between the head and flange of the rail, a shorter
115 dependent or reinforcing portion integrally united with the splice-bar portion and symmetrical therewith, said portions being connected by a plane web portion.

5. A splice-bar for railway-rails comprising a splice portion of angle-section fitting closely between the head and the flange of the rail, a
120 shorter depending or reinforcing portion of section similar to the splice-bar portion and connected therewith by a web of substantial width and means for securing to the rails, a pair of said bars.
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6. A splice for railway-rails comprising a pair of bars, the two portions of each bar being symmetrically arranged about the central longitudinal plane thereof, each of said portions being of angle form and adapted to fit
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5 closely between the head and flange of the rails, the ends of one of said portions being cut away, leaving a depending central portion integrally connected to the other or splice-bar portion, and means for securing said bars to the rails.

7. A splice for railway-rails comprising a pair of splice-bars each having portions of angle-section fitting closely between the head
10 and the flange of the rail, a central depending or reinforcing portion of section similar to the splice-bar portion integrally connected to and symmetrical with said splice-bar portion,

the sides of the depending portion being substantially at right angles to the longitudinal axis of the bar, thereby forming an anti-rail-creeping device, and means for securing said bars to the rails. 15

In testimony whereof we hereto affix our signatures in the presence of two witnesses.

RALPH V. SAGE.
GEORGE E. THACKRAY.

Witnesses:

ELMER SEAVEY,
CHAS. N. CHAMBERS.