

B. G. BRAINE.
 ROLLED STEP RAIL JOINT.
 APPLICATION FILED JULY 8, 1911.

1,007,914.

Patented Nov. 7, 1911.
 4 SHEETS—SHEET 1.

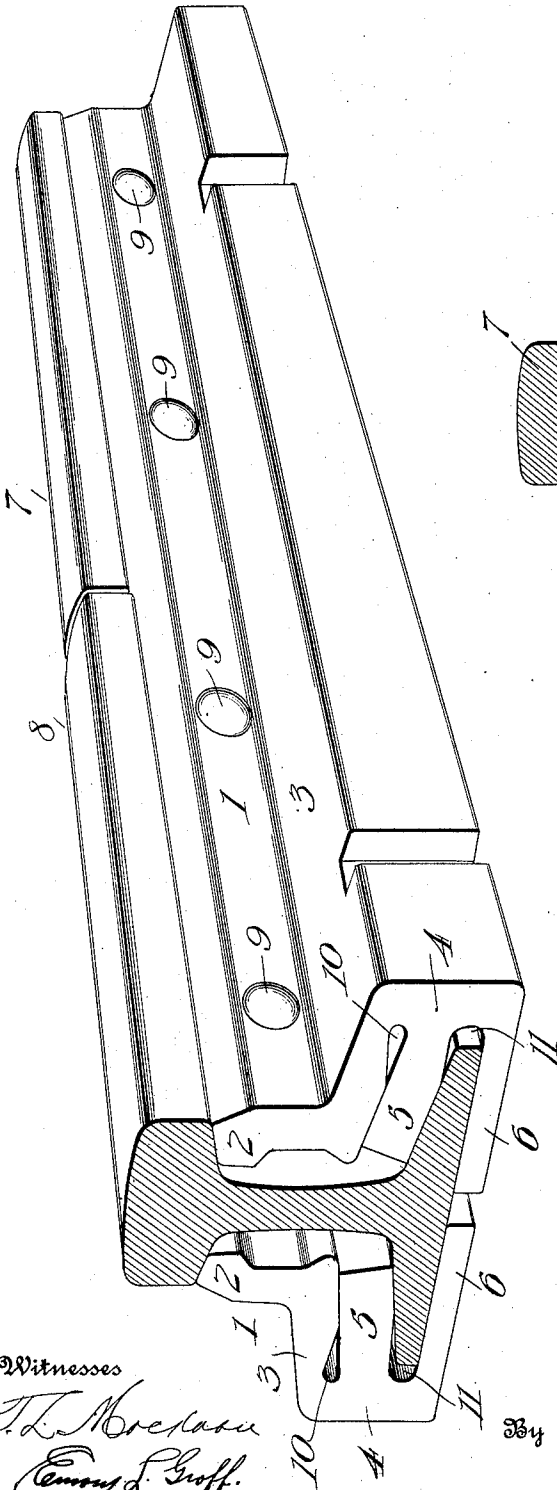


Fig. 1.

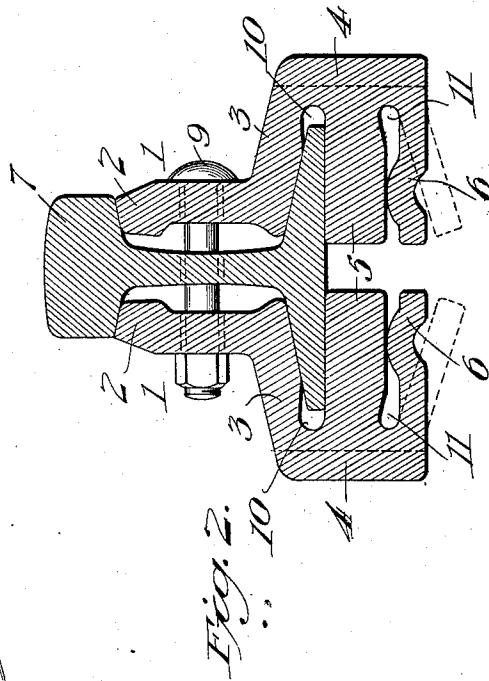


Fig. 2.

Witnesses

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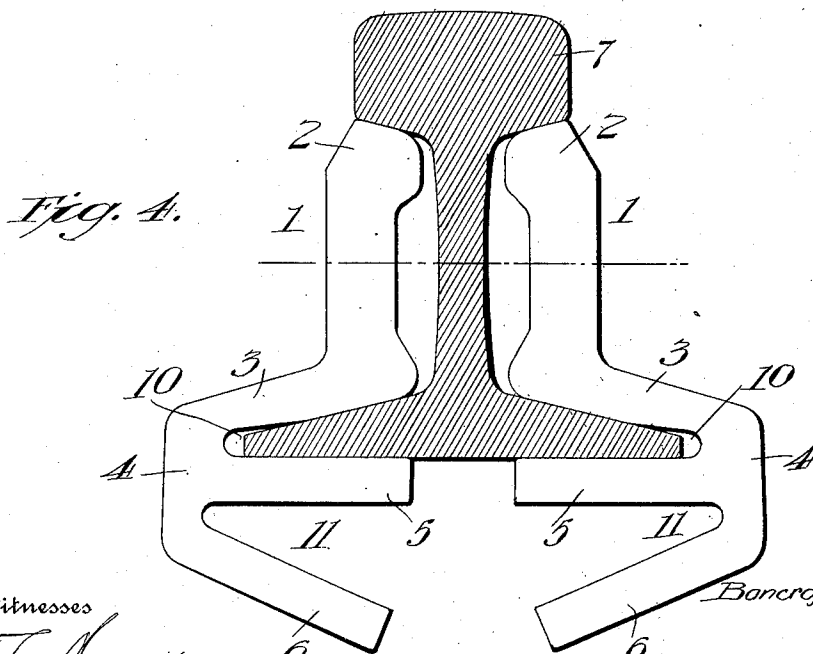
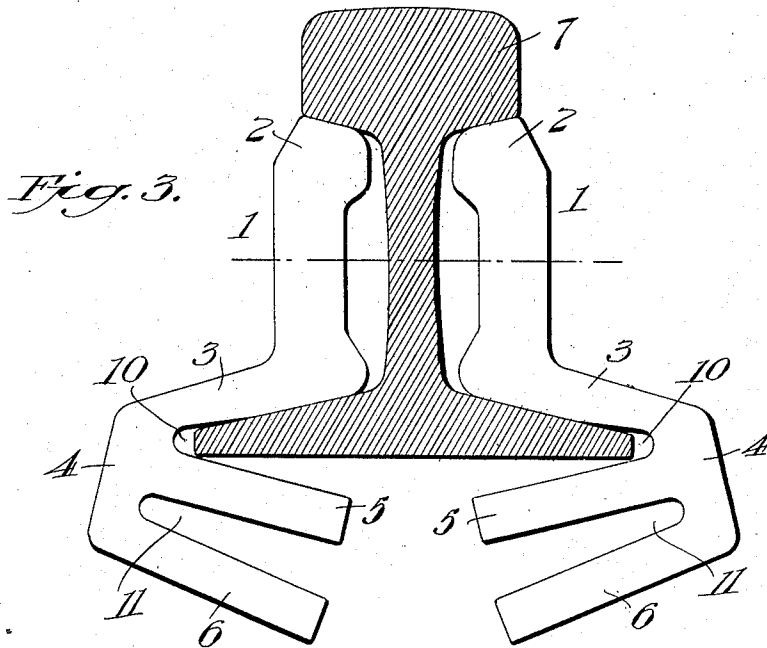
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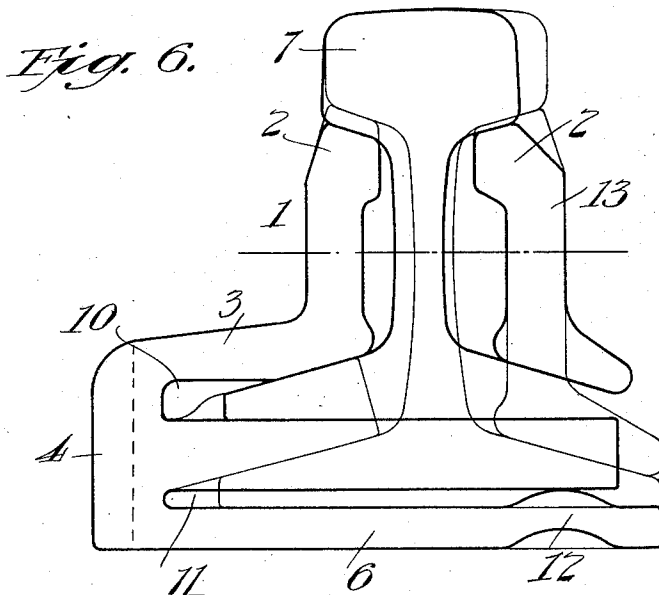
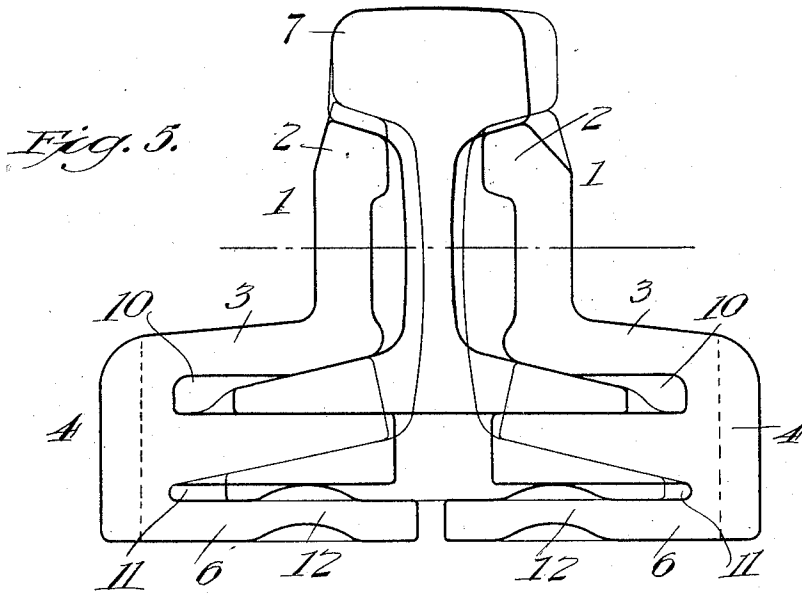
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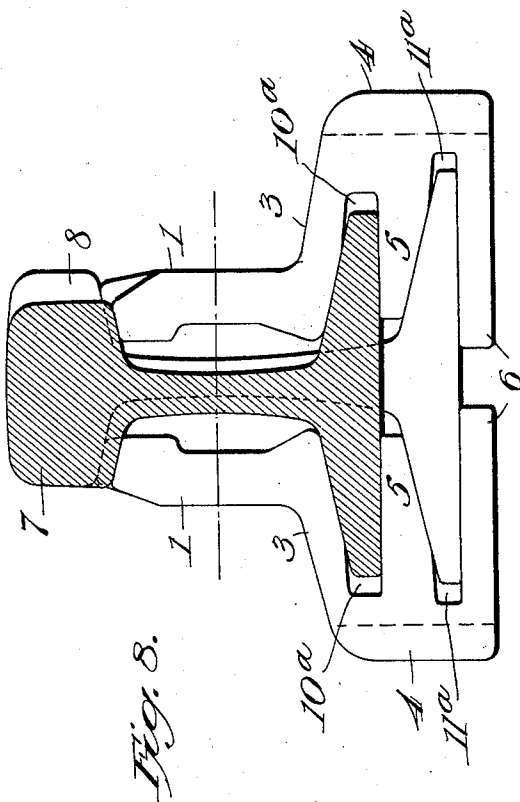
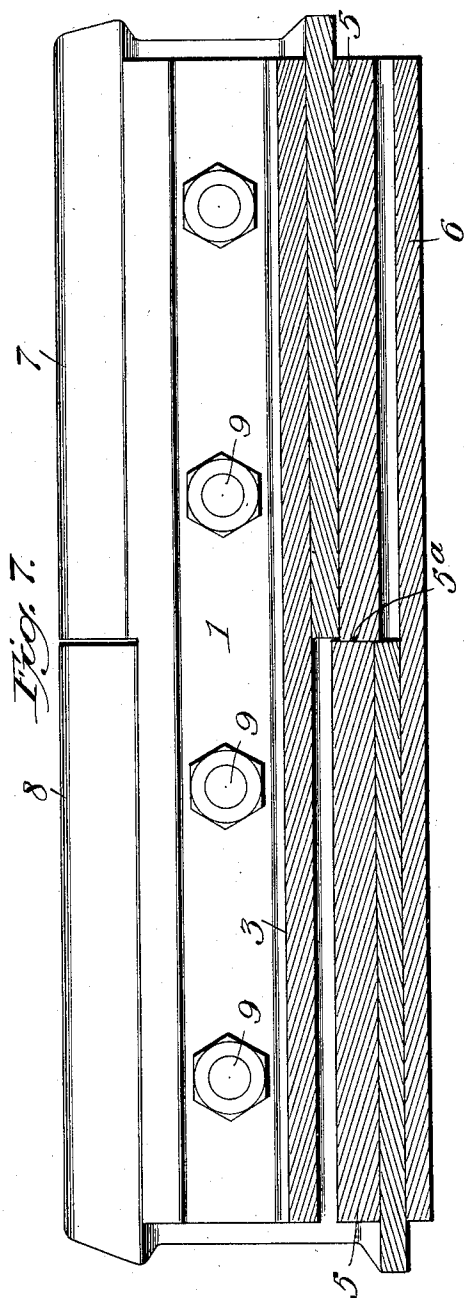
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 4 SHEETS—SHEET 4.



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UNITED STATES PATENT OFFICE.

BANCROFT G. BRAINE, OF NEW YORK, N. Y., ASSIGNOR TO THE RAIL JOINT COMPANY,
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ROLLED STEP RAIL-JOINT.

1,007,914.

Specification of Letters Patent.

Patented Nov. 7, 1911.

Application filed July 8, 1911. Serial No. 637,556.

To all whom it may concern:

Be it known that I, BANCROFT G. BRAINE, a citizen of the United States, residing at New York city, in the county of New York and State of New York, have invented certain new and useful Improvements in Rolled Step Rail-Joints, of which the following is a specification.

This invention relates to the subject of compromise or step rail joints for connecting the abutting ends of dissimilar rails of different heights or sections so that the gage and surface thereof are brought into alinement.

It has been a general practice heretofore to construct joint bars, for use in a compromise or step rail joint, by making such bars of steel or malleable iron castings and of a design and configuration corresponding to that of the rail sections to be united, besides providing for the stepped relation of the rail supporting base sections by making the base supporting section for the smaller rail thicker than the base supporting section for the larger rail, thereby disposing the upper supporting faces of the separate base sections in different elevations. This is a well known construction and involves some manufacturing difficulties on account of the character of the joint bars and the fact that the same are made of castings, while the present invention proposes to provide an improvement in the art of making step-joint bars in order to produce bars of substantially uniform design and dimension throughout, and in which the weight and thickness of material are more uniformly distributed over the entire length of the bar, besides providing a bar that can be manufactured with facility by the ordinary rolling mill processes.

It is therefore a distinct feature and object of the present invention to provide certain novel and practical improvements possessing special utility in the manufacture of step-joints from rolled steel. Also the invention has in view a novel construction of rolled step-joint bar presenting a plurality of rail-supporting base-sections that extend throughout the length of the bar body, while at the same time are capable of being bull-dozed or set up to provide for the necessary stepping and alining of the dissimilar rails.

With these and many other objects in

view, which will more readily appear as the nature of the invention is better understood, the same consists in the novel construction, combination, and arrangement of parts hereinafter more fully described, illustrated and claimed.

The essential features of the invention involved in carrying out the objects above indicated are necessarily susceptible to structural modifications and to embodiment in various forms of step joints without departing from the scope of the invention, but certain preferred and practical forms of the invention are shown in the accompanying drawings, in which—

Figure 1 is a sectional perspective view of a rolled steel step-joint embodying the improved joint bar constructed in accordance with the present invention. Fig. 2 is a cross-sectional view of the joint shown in Fig. 1, the line of section being taken through the smaller rail. Fig. 3 is a detail view illustrative of the improved joint bar section in one of the forms in which it may be rolled, and before the final shaping of the bar. Fig. 4 is a view similar to Fig. 3 showing the joint bar section fitted up for one rail and as it might be used for the reinforced base-plate joint. Fig. 5 is a diagrammatic sectional view of a compromise or step rail joint illustrating the dissimilar rails connected by the improved joint bars and showing the plural base-supporting feature of the bars. Fig. 6 is a view similar to Fig. 5 but showing another form of joint embodying the invention. Fig. 7 is a vertical longitudinal sectional view through the joint shown in Fig. 1, the said section being taken on one side of the rails so as to show the slit in the middle of the upper base supporting flange. Fig. 8 is an end view of a still further modification, the smaller of the two rails being shown in section.

Like references indicate corresponding parts in the several figures of the drawings.

In carrying out the invention it will be apparent that the rail joint as an entirety may be modified to meet different requirements, and according to the option of the manufacturer without affecting the characteristic and distinguishing feature of the invention which resides in the construction and design of the joint bars that are employed to step and aline the dissimilar rails. In all forms of joint bars embodying the

invention, the essential features remain the same, and referring to the figures of the drawings exemplifying these features it will be observed that each joint bar, in all embodiments shown, consists of an upright splice member 1, formed at its upper edge with the usual bearing head 2, engaged beneath the heads of the rails, and at its lower edge formed with an inclined outwardly extending foot-flange 3 overlying the flanges of the rails, and from which foot flange depends an integral base-portion 4 which has formed therewith, by the action of rolling passes, a pair of spaced superposed rail-supporting base sections 5 and 6, respectively, the base section 5 occupying an intermediate position between the lower base section 6 and the foot-flange 3 of the bar body. It will also be observed that the upper rail-supporting base section 5 is formed at substantially the middle portion thereof with a slit 5^a, thereby admitting of the portion of this rail-supporting base section on one side of the junction of the rails being bent or bull-doized independently of the portion of the said rail-supporting base section on the opposite side of the junction of the rails. When the rails are of such sections that only a slight step is necessary in the upper base section 5, this step may be effected by offsetting the upper base section 5 at the meeting point of the rails, instead of slitting it as shown in the drawings at 5^a.

In constructing the step rail joint with joint bars of the construction described, it will be observed that a pair of such bars is employed with the dissimilar rails 7 and 8, the same being arranged respectively on opposite sides of the rails and fastened thereto by means of the usual series of joint bolts 9. It will be observed that rail flange receiving spaces 10 and 11 are respectively provided between the foot flange 3 and the intermediate base section 5, and between the latter and the lower base section 6, and which respectively receive the flanges of the smaller and larger rails as plainly shown in Figs. 1 and 2 of the drawings.

The joint bar may be rolled to the section shown in Fig. 2 of the drawings with the lower base section 6 open as indicated by the dotted lines, the said lower base section being bull-doized to the position shown by the full lines in Fig. 2 after rolling, thereby properly adjusting the joint bars to receive the smaller rail. Again, the joint bar may be rolled to the section shown in Fig. 3, and after the rolling, both base sections 5 and 6 may be bull-doized to the position shown by the full lines in Fig. 2. The joint bar section under one half of the joint is made suitable for the larger rail 8 by bull-doizing the intermediate base-section 5 on one side of the slit 5^a to a position against and in rigid contact with the foot flange 3 so as to

open up the lower space 11 for the reception of the flange of the larger rail, as plainly shown in Fig. 1.

By way of further exemplifying the invention there is shown in Fig. 3 of the drawings the bar section as it is rolled, while in Fig. 4 of the drawings the same bar section is shown set up for one rail, while in Fig. 5 of the drawings, the stepping and alining action of the joint bars is illustrated, together with the added feature of providing the lower base section 6 of each bar with a pressed-up bearing projection 12 that is intended to give a solid base support for the intermediate base section 5 that engages beneath the flange of the smaller rail. The same features of the bar, as shown in Fig. 5 are illustrated in Fig. 6 applied to a modified form of joint, wherein the base section extends the full width of the rail bases and the improved joint bar is only arranged at one side of the rails, while an ordinary angle-bar 13 is fitted in the fishing spaces at the opposite sides of the rails.

With the form of the invention shown in Fig. 8 no bull-doizing of the upper rail supporting base section 5 is necessary, since the space 10^a between the foot flange 3 and the upper base section 5 is uniform throughout the length of the joint bar and sufficiently large to receive the basal flange of the smaller rail, while the space 11^a between the upper base section 5 and the lower base section 6 is also uniform throughout the length of the splice bar and sufficiently large to receive the basal flange of the larger rail. It will thus be apparent that a portion of each of the spaces 10^a and 11^a will be unoccupied by the respective rails, and these unoccupied portions of the spaces may be filled in by suitable filler blocks, should such be found desirable.

While the invention is more particularly adapted for use in connection with stepped joints, yet it will be readily appreciated that the forms of the invention shown in Figs. 2 and 4 might be employed to connect rails of the same section, the lower base sections 6 of the splice bars serving as reinforcing elements.

From the foregoing it is thought that the construction and many advantages of the herein described improvement in step rail joints will be apparent without further description, and it will also be understood that various changes in the form, proportion, and minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

I claim,—

1. A step-joint bar having a plurality of base supports for dissimilar rails extending throughout the length of the bar body.
2. A step-joint bar having a plurality of

rail-supporting base sections for dissimilar rails that extend throughout the length of the bar body.

3. A step-joint bar having separate base supports for the rails arranged one above the other.

4. A step-joint bar having a plurality of base supports arranged one above the other and extending throughout the length of the bar body.

5. A step-joint bar having two base supports for dissimilar rails, said base supports being arranged one above the other.

6. A step-joint bar having separate base supports for dissimilar rails arranged in superposed spaced relation.

7. A step-joint bar having separate base supports for dissimilar rails arranged one above the other, rail flange receiving spaces being respectively provided between the bar body and the intermediate base support, and between the latter and the lower base support.

8. A step-joint bar having a pair of rail-supporting base sections arranged in superposed spaced relation and extending throughout the length of the bar body.

9. A rolled step-joint bar having a pair of rail-supporting base sections arranged one above the other and bull-dozed into positions for respectively supporting the dissimilar rails.

10. A step-joint including the dissimilar

rails and a joint bar fitting the fishing spaces of the rails and having a pair of inwardly extending rail-supporting base sections bull-dozed into positions for stepping the rails, the intermediate base section occupying a position beneath the bottom of the smaller rail and over the flange of the larger rail, and the lower base section occupying a position below both rails but in supporting contact with the bottom of the larger rail.

11. A splice bar for rail joints including a pendent base portion formed with a pair of inwardly projecting rail base supporting sections.

12. A splice bar for rail joints including a foot flange formed with an integral and pendent base portion, the said base portion being formed with spaced base sections which project inwardly therefrom and are arranged substantially parallel to the foot flange.

13. A splice bar for rail joints including a foot flange formed with an integral and pendent base portion, the said base portion being provided with inwardly extending base supports either of which is designed to engage the base of a rail.

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

BANCROFT G. BRAINE.

Witnesses:

E. F. SCHERMERHORN,

ALEX CHAPMAN.