

No. 868,402.

PATENTED OCT. 15, 1907.

B. G. BRAINE.

RAIL JOINT.

APPLICATION FILED AUG. 11, 1906.

2 SHEETS—SHEET 1.

Fig. 1.

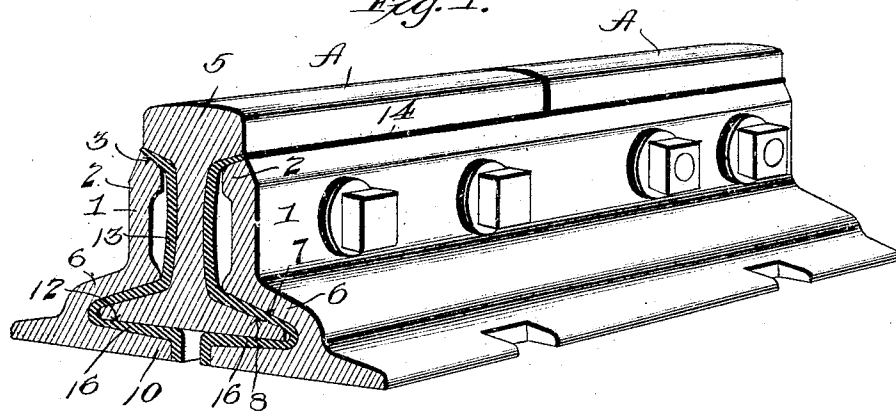
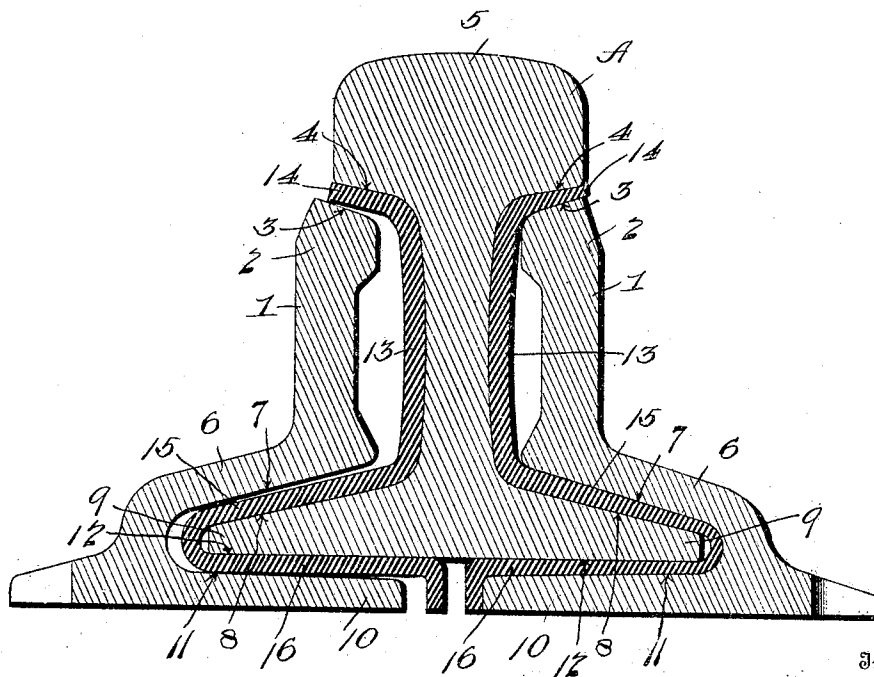


Fig. 2.



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2 SHEETS—SHEET 2.

Fig. 3.

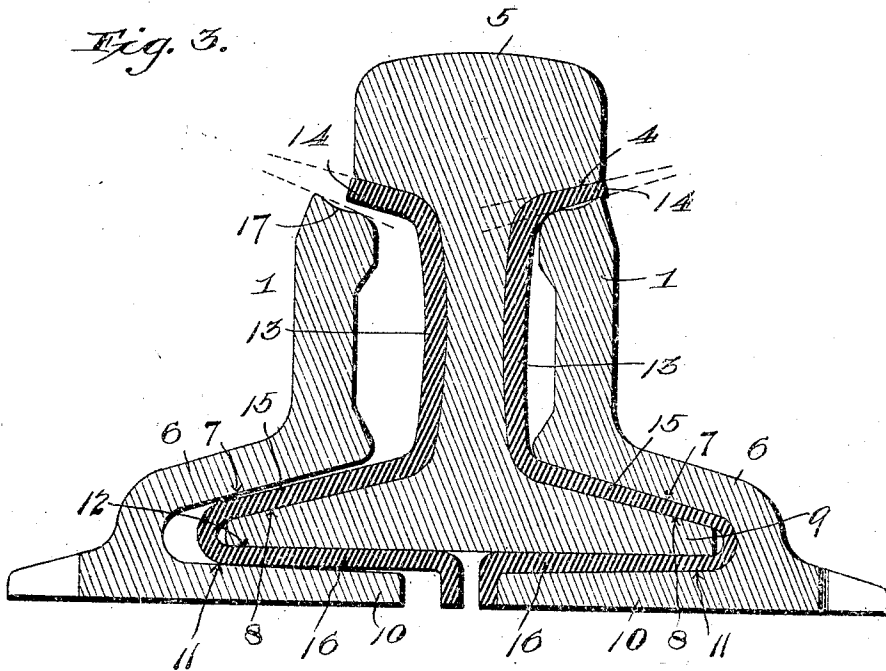
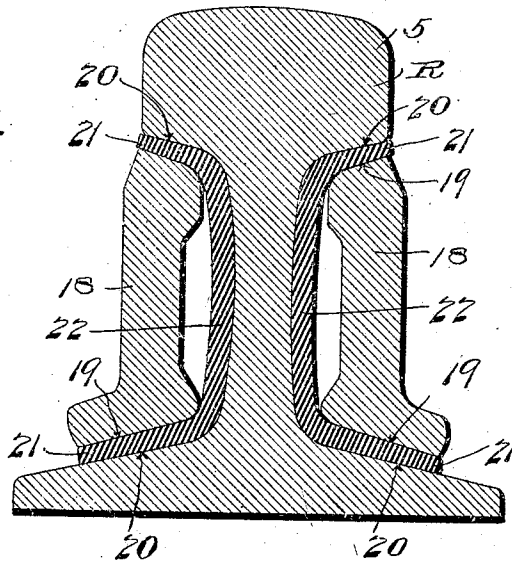


Fig. 4.



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UNITED STATES PATENT OFFICE.

BANCROFT G. BRAINE, OF NEW YORK, N. Y., ASSIGNOR TO THE RAIL JOINT COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

RAIL-JOINT.

No. 868,402.

Specification of Letters Patent.

Patented Oct. 15, 1907.

Application filed August 11, 1906. Serial No. 330,255.

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 Rail-Joints, of which the following is a specification.

This invention relates to the subject of rail joints, and has special reference to an improved principle of construction applicable to various types of rail joints and providing what may be characterized as a binding means for interposed or inserted surface-plates such as insulation plates employed in insulated rail joints, or bonding plates such as employed in conjunction with rail joints fitted or equipped with a rail bonding means. To this end the invention primarily contemplates a novel and effective binding means for insulation or bonding plates which provides for firmly and tightly securing such plates in intimate contact with the opposing bearing surfaces of the rail and the rail joint members or plates. Also, this phase of the invention involves a construction which not only has the function of binding or fastening an insulation or bonding plate in its proper applied position, but which also possesses special utility as a practical structural expedient for tightly wedging an insulation plate or sheet permanently in its proper position and effectually preventing insulating material from flowing under load strains or otherwise working out of position as is the case at times with some types of insulated rail joints.

In carrying out the invention, aside from the general application thereof as a binding or fastening means for interposed or inserted plates of any character, the same provides a construction which is specially applicable as an improvement to that standardized type of insulated rail joints now known to railway engineers as the "continuous" insulated joint and which is exemplified by the former patents to the applicant, viz: # 731,016, dated June 16, 1903 and # 779,066, dated January 3, 1905, and also by the patent to Fearey, # 582,907, dated May 18, 1897 and also by Patents Nos. 782,645 and 797,490. Although of practical utility in connection with this special type of insulated rail joint, the invention is necessarily applicable to any type of joint wherein it is desirable to secure the results contemplated by the foregoing objects.

With these and many other objects in view which will readily appear to those familiar with the art 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 the relation of the angles of the opposing bearing faces of the rail and the rail joint members or plates, is necessarily susceptible to a wide range of structural modi-

fication and also to a wide range of application to various types of joints, and various combinations, without departing from the scope of the invention, certain preferred embodiments of which are suggested in the accompanying drawings, in which:

Figure 1 is a sectional perspective view of a rail joint of the "continuous type" embodying binding means contemplated by the present invention. Fig. 2 is an enlarged cross sectional view of the same type of joint, showing one of the side angle plates drawn tight against the interposed or inserted surface plate, and opposite side of the joint shown with the parts slightly separated and illustrating how the surface plate may be of substantially uniform thickness instead of corresponding in taper to the wedging or tapering spaces between the opposing faces of the rail and the rail joint member. Fig. 3 is a cross sectional view similar to Fig. 2 showing the provision of a positive gripping surface on the bearing face of one or more of the bearing faces of the rail joint members for more effectually pinning fiber or bond in position. Fig. 4 is a cross sectional view showing the application of the improvement to the plain angle bar type of rail joint.

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

In carrying out the present invention, no change is required in the general organization of the parts of any type of rail joint to which the same may be applied, nor any radical departure necessitated in the structural features of such joint, as the improved feature of construction which provides a definite and positive binding means for interposed or inserted plates such as insulation plates or bonding plates is necessarily applicable to any type of rail joint utilizing surface plate of this general character. Furthermore, the binding or pinning means provided by the present invention may be utilized in a variety of ways and in different positions or locations as a fastening for insulation plates or bonding plates, whether in short sections or full length, and whether detachable or permanently positioned. While susceptible to this wide range of application and function, the invention, however, possesses special utility as a binding or pinning means for insulation plates and is hence of special and practical value in connection with insulated rail joints. In this phase, the invention also provides certain novel and improved functions in connection with that type of insulated rail joints characterized by railway engineers as the "continuous rail joints" and exemplified, for instance, in the applicant's former patents hereinbefore referred to, so for illustrative purposes, the preferred embodiments of the invention are shown in Figs. 1, 2, and 3 of the drawings. In these figures the rail joint illustrated is of the continuous type referred to and essentially includes in its general organization the rails A A and the opposite continuous side

angle plates 1 1. In this type of rail joint, each of the continuous side angle plates 1 is provided at its upper edge with an engaging head 2 having an inclined bearing face 3 opposing the corresponding inclined bearing face 4 at the under side of the rail head 5. Also, each of said continuous side plates 1 is formed at the lower edge of its vertical member with an inclining foot flange 6 lying over the rail base and provided at its under side with an inclined bearing face 7 opposing the corresponding bearing face 8 on the upper side of the base flange 9 of the rail. In addition to these features, each continuous side plate 1 of the type of joint referred to has extended from and below the outer edge of its foot flange 6 a base flange extension 10 occupying a substantially horizontal position and lying beneath the base flange of the rail. The said base flange 10 of the side plate is provided at its upper side with a bearing face 11 opposing the corresponding bottom face 12 of the rail. In the insulated continuous rail joint of the type herein described, an insulation plate or sheet 13 is interposed between the opposing faces of the rails and the side angle plates 1. These insulation plates or sheets 13 are usually of a continuous form and not only face the sides of the rail joint, but are also formed with top flanges 14 lying between the upper bearing faces 3 of the side plate and the under bearing face 4 of the rail head and with foot-pieces between faces 7 and 8. Also, the insulated plate or sheet 13 is provided with a base piece 16 lying between the bearing faces 11 and 12.

A distinguishing feature of the present invention resides in the expedient of making one or more of the angles of the bearing faces of the rail joint plate of a greater degree than the angles of the corresponding bearing faces of the rail, thus forming a binding or fastening wedge which serves to securely pin the interposed or inserted plates in a fixed position and prevents the same from creeping or working out of place as is sometimes the case in connection with insulation plates. In this particular function it should be noted at this point that the top flange 14 of the insulation plate 13 sometimes has a tendency to work outward between the opposing bearing surfaces 3 and 4, whereas, according to the present invention, the wedging action of the bearing face 3 positively prevents this result and therefore retains a more perfect and desirable insulation of the joint.

The result referred to is accomplished by having the angles of the bearing faces of the rail joint members different from the angles of the corresponding rail faces, although it will be observed from the drawings that in the preferable construction the angles of the bearing faces 3, 7 and 11 are greater than the rail faces opposing the same and are disposed in directions to secure a similar wedging action upon the members 14, 15, and 16 of the insulation when the side or joint plates are tightened up.

Of course, the wedging feature on the joint plate may be applied to one or more points according to the type

of joint with which the invention is associated, although it will be observed that in the continuous type of joint, a very practical and effective construction is provided.

Obviously, the result obtained is similar whether the interposed or inserted surface plate 13 is an insulation plate or bonding plate, or whether such plate is continuous, in sections, detachable or permanent. Furthermore, while in some cases it may be desirable to have the "pinned" portions of the surface plate 13 of a tapering thickness, yet the invention may be carried out by having such portions of the same thickness as suggested in Fig. 2. Again, if desired to secure a more effective pinning action, one or more of the bearing faces of the joint plate may be concaved as indicated at 17 in Fig. 3 of the drawings, to provide a positive gripping surface upon said bearing.

To illustrate the range of applicability to different types of joints, there is shown in Fig. 4 of the drawings a plain angle bar type of insulated rail joint including in its construction the side angle bars 18 having the upper and lower bearing faces 19 disposed at a greater angle than the corresponding bearing faces 20 of the rail R and cooperating with the flange portions 21 of the insulation plate or sheet 22 in the same manner as herein described.

I claim:

1. In a rail joint, the rails, opposite separated horizontally-movable independent joint members, each having a bearing face disposed at a greater angle than the corresponding rail face, and a plate element pinned between said opposing faces.
2. In a rail joint, the rail having a plurality of bearing faces, and a rail joint member likewise having a plurality of bearing faces disposed at a different angle from those of the rail, and plate elements pinned between said faces.
3. In a rail joint, a rail having a plurality of bearing faces, a rail joint member likewise having a plurality of bearing faces arranged on a greater angle than said rail faces, and plate elements pinned between the opposing faces.
4. In a rail joint, the rails, opposite separated horizontally-movable independent joint plates provided at their top edges with inclined bearing faces arranged on a greater angle than the corresponding bearing face at the under side of the rail head, and a plate element pinned between said two faces.
5. In a rail joint, the rail, a joint member having at its upper and lower edges inclined bearing faces arranged on a greater angle than the corresponding rail faces, and a plate element pinned between said opposing faces.
6. In a rail joint, the rail, the continuous joint member provided at its head and foot with inclined bearing faces arranged on a greater angle than the corresponding rail faces and also having a bottom base flange extension provided on its upper surface with a bearing face arranged on a greater angle than the bottom face of the rail, and a plate element pinned between each pair of said opposing faces.

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

BANCROFT G. BRAINE.

Witnesses:

C. B. PITTENGER,
M. LOWERS.