

No. 868,519.

PATENTED OCT. 15, 1907.

B. WOLHAUPTER.  
INSULATED RAIL JOINT.  
APPLICATION FILED DEC. 3, 1906.

2 SHEETS—SHEET 1.

Fig. 1.

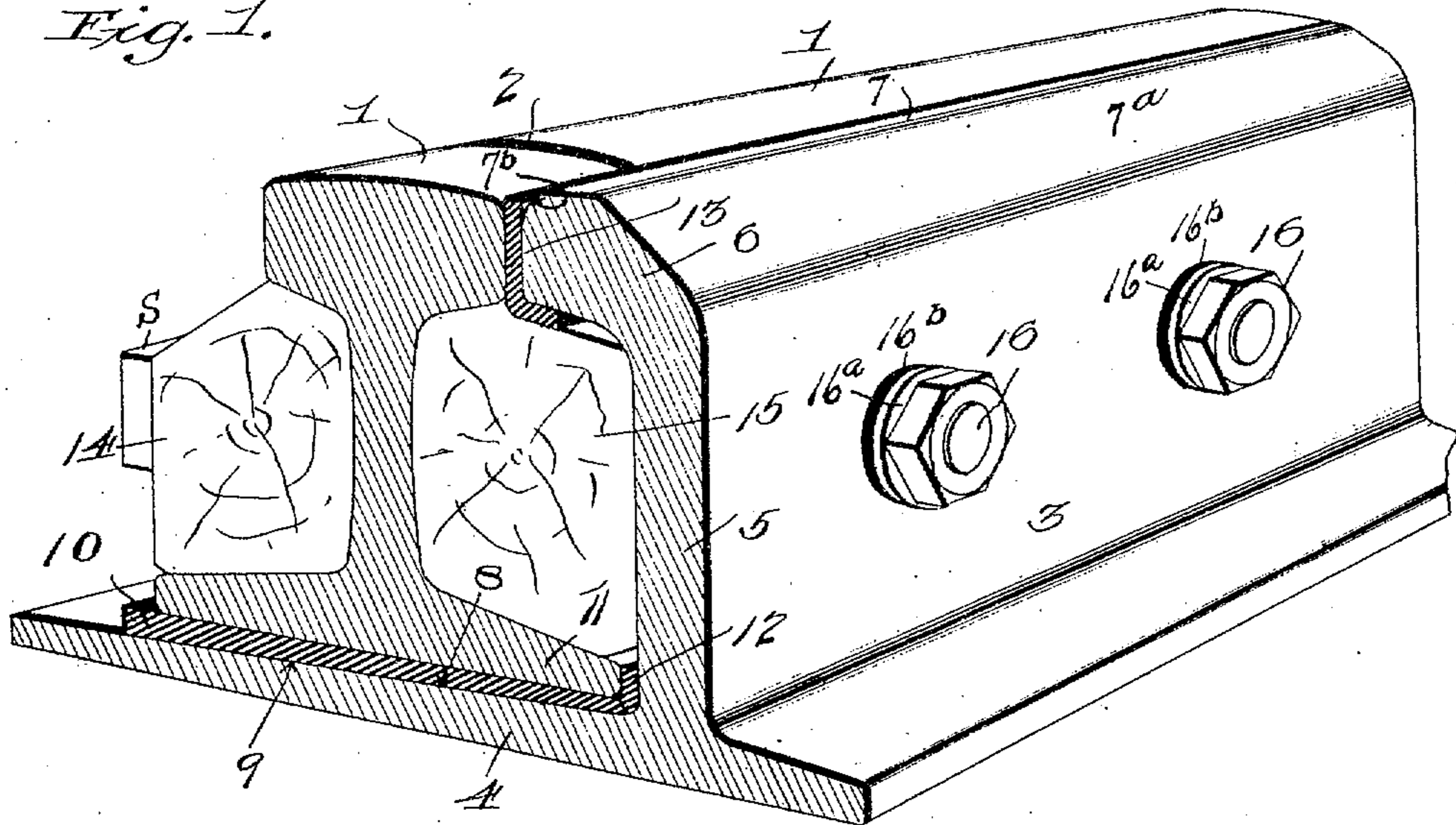
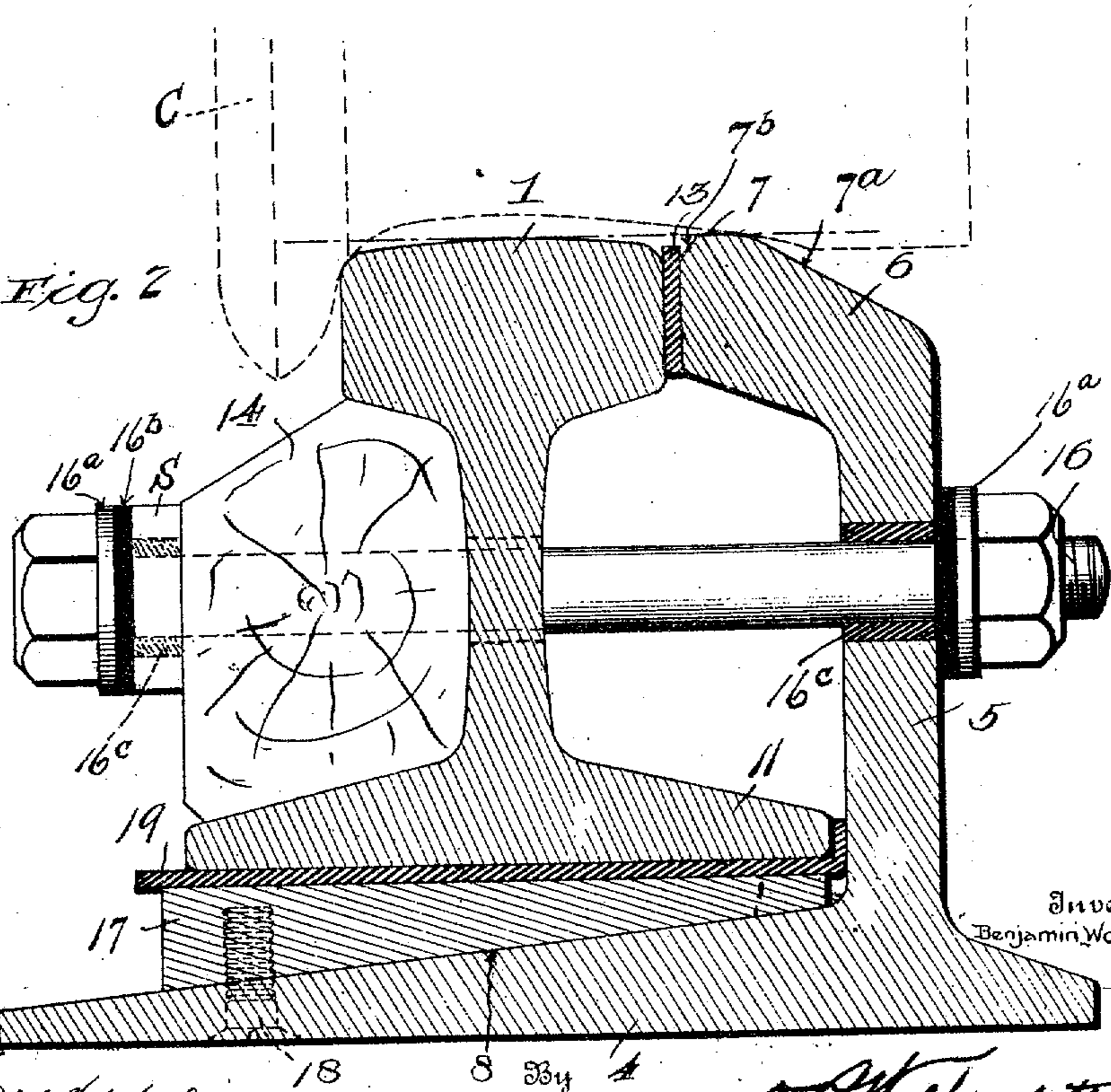


Fig. 2.



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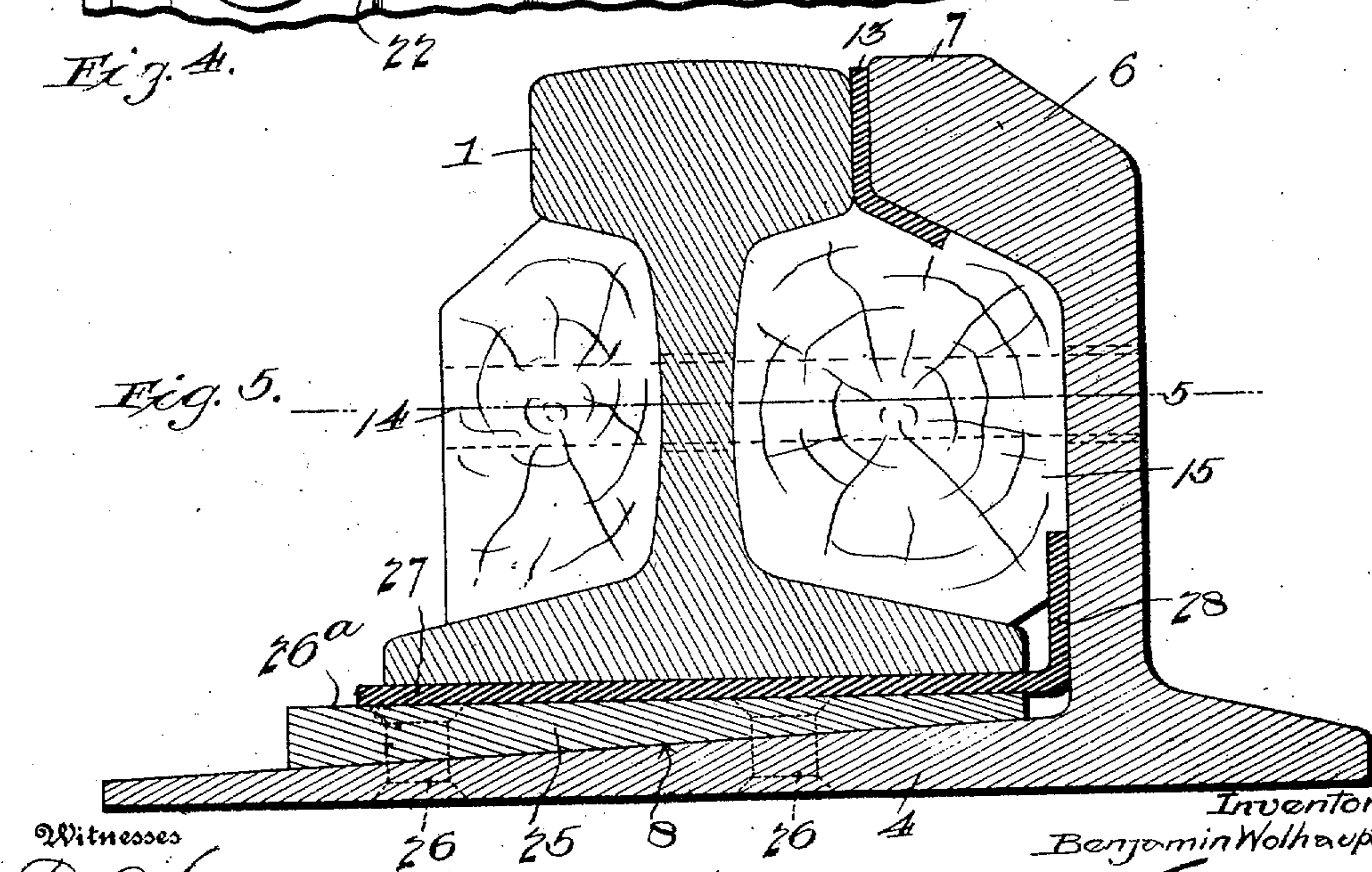
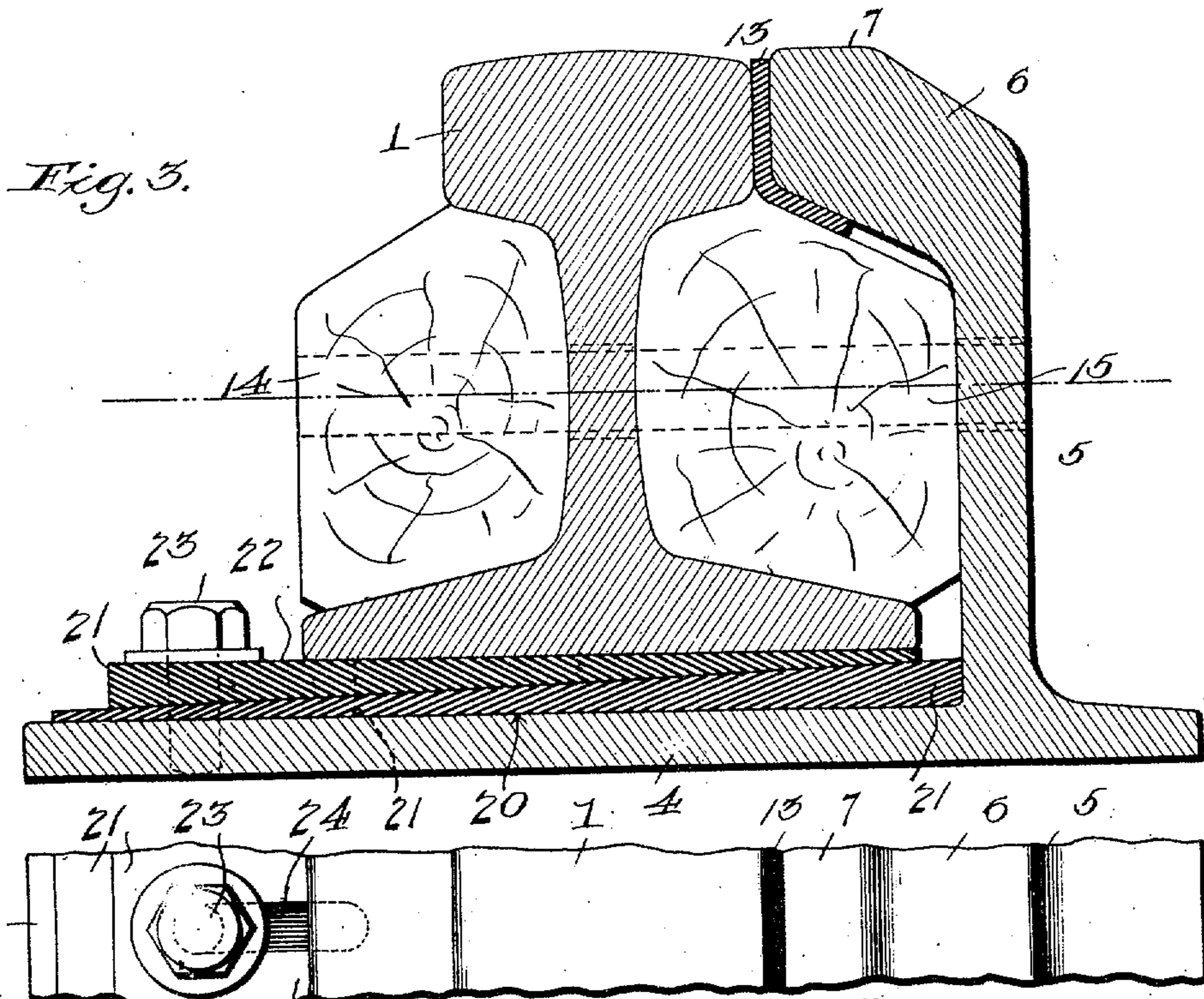
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2 SHEETS—SHEET 2.



Witnesses

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# UNITED STATES PATENT OFFICE.

BENJAMIN WOLHAUPTER, OF NEW YORK, N. Y., ASSIGNOR TO THE RAIL JOINT COMPANY,  
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## INSULATED RAIL-JOINT.

No. 868,519.

Specification of Letters Patent.

Patented Oct. 15, 1907.

Application filed December 3, 1906. Serial No. 346,151.

*To all whom it may concern:*

Be it known that I, BENJAMIN WOLHAUPTER, a citizen of the United States, residing at New York city, in the county of New York and State of New York, have  
5 invented certain new and useful Improvements in Insulated Rail-Joints, of which the following is a specification.

This invention relates to rail joints of the insulated type.

10 A special object of the invention is to provide certain new and practical improvements in an insulated rail joint embodying in its organization a base support and base insulation, and an auxiliary side bridging rail performing the functions of a reinforce or girder member  
15 for the joint, and also acting in the capacity of a carrying rail receiving the tread of the car wheels when passing the joint between the service rails. In connection with these characteristic features of the joint structure, the invention contemplates means which provide a  
20 broad and firm base support for the service rails, and at the same time securing a thorough and complete base insulation therefor which is entirely relieved from the load or weight of the passing trains.

A further object of the invention is to provide a novel  
25 and practical construction of rail shoe wherein one piece of metal is utilized for both the side carrying rail and the base support for the running rail.

Furthermore, the invention contemplates a novel  
30 design of side bridging rail which provides a complete clearance for worn car wheels so as to obviate the hammer blows produced by the raised tread or tread portions of such wheels.

Another object of the invention is to provide a novel  
35 design of rail head for the side bridging rail which not only provides for complete clearance for the projecting or raised tread portions of worn car wheels, but also is formed, (next to the top insulating strip between the running rail and bridging rail heads) with a spread-compensating surface which leaves a sufficiently well  
40 defined space to accommodate and receive the spread or flow of the metal from the head of the auxiliary side rail. This obviates the possibility of the metal from the side rail head flowing into metallic contact with the running or service rails thereby causing short circuit-  
45 ing.

In carrying out that phase of the invention which involves means for entirely relieving the base insulation from the load, the invention has in view the provision of an effectively designed and formed auxiliary bridging  
50 rail which serves as a girder to strongly reinforce the joint parts, and also presents a carrying head which receives and supports the car wheels in passing the joint, thereby protecting the ends of the service rails from the damage which results from the hammering of  
55 the wheels over the ordinary types of joints.

In addition to the foregoing objects, and the general object of providing a joint thoroughly insulated and reinforced throughout, the invention has for a distinctive  
60 object the characterizing function of providing the joint proper with definite and positive means for determining and fixing the relative height of the running and the auxiliary side bridging rails, whereby the height of said auxiliary rail may be adjusted to the level of the service or running rails to compensate for the varying  
65 heights of traffic-worn rail ends in the application of the improved rail joint to old rails, or to new rails of different heights. This enables the joint purchaser to accurately adjust and set up the joint parts to satisfy the exact conditions to be met.

With these and many other objects in view, which  
70 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  
75 carrying out the objects above indicated are necessarily susceptible to a wide range of structural modification, but for the purpose of exemplifying the improvements claimed, a few of the preferred embodiments of the invention are shown in the accompanying drawings, in  
80 which—

Figure 1 is a sectional perspective view of a rail joint embodying the present invention, and showing one means of providing for the relative vertical adjustment  
85 of the auxiliary side rail. Fig. 2 is a cross sectional view of the joint between bolts, showing another modification in the means for effecting the relative height adjustment of the auxiliary side rail. Fig. 3 is a similar  
90 view showing another modification of the invention. Fig. 4 is a projected plan view of the section of rail joint shown in Fig. 3 illustrating a form of fastening means that may be utilized in connection with adjusting  
95 wedges. Fig. 5 is a cross sectional view of another form of joint embodying the invention and also illustrating another modification in the means for effecting the relative height adjustment of the auxiliary side rail.

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

While the present invention is susceptible to embodiment in a variety of joint structures and is capable  
100 of general application as an insulated rail joint, still, in all forms the same characteristic and distinguishing features are preserved, such features being the general design of the joint shoe or chair whereby an effective  
105 base support is provided for the joint in connection with a reinforcing girder acting in the capacity of a bridging rail, and the provision of definite and positive means for adjusting and fixing the relative height of the auxiliary side bridging rail. These combinations are  
110 well exemplified by the simple and practical form of

joint shown in Fig. 1 of the drawings, in which 1—1 designate the adjoining service rail ends between which is interposed the usual insulating end post 2 subserving the usual functions of that element in an insulated rail joint. As shown in the figure of the drawings referred to, the rail joint proper includes in its organization a joint shoe or chair designated in its entirety by the numeral 3, and essentially consisting of a metallic base plate 4, and an upright auxiliary rail member 5 supported and carried by the base plate at one side edge thereof so as to locate the said rail member at one side of the service rail ends. The metallic base plate 4 is of greater width than the service rail bases and extends beneath and across the joint between the same so as to constitute a wide and effective rail supporting base which subserves the important functions of maintaining a firm and substantially unyielding base for the rails to maintain the alinement of continuity thereof. In the form of the invention being described, the rail supporting base or base plate 4 and the auxiliary side rail member 5 are integrated so as to form integral parts of the shoe or chair, and by reason of the rigid or integral connection between the auxiliary rail member and the base plate 4, it will be obvious that the said rail member serves as a reinforcing or strengthening girder which stiffens and strengthens the entire joint, while at the same time embodying means for supporting and carrying the car wheels over and past the joint between the service rails. To secure this latter function in the most effective manner, the auxiliary side bridging rail member 5 is designed so as to be rolled at its upper edge with what may be termed an inwardly and laterally deflected carrying head 6, usually disposed oblique to the vertical plane of the upright web of the member 5, and formed along its upper and inner edge, next to the service rail ends, with a running or flat surface 7 which is disposed in such proximity and parallelism to the service rails as to receive and carry the tread of the car wheels when the train is passing the joint. This provides means whereby the load is borne by the auxiliary rail or rail member 5 and base 4.

One of the practical features of the present invention resides in the special design or form of the side rail head 6. This rail head is preferably formed on the outer side thereof with a beveled or inclined clearance face 7<sup>a</sup> which slopes downwardly from the main running or flat surface 7 so as to afford a complete clearance for worn car wheels.

As plainly indicated by the dotted lines in Fig. 2 of the drawings, the reference letter C designates a portion of a car wheel which has become badly grooved or worn, as is common to the wheels of shifting or yard engines and freight locomotives. However, in any case, a worn car wheel will present raised tread portions which ordinarily would produce hammer blows upon the head of the auxiliary side rail with the result of quickly damaging the same, whereas the provision of the clearance face 7<sup>a</sup> obviates that result.

Furthermore, in the formation of the side rail head 6 it may be found desirable and preferable to provide the same along the inner edge of the head next to the service rails, and also next to the top insulation at this point, with a longitudinal bevel or cut away portion designated by the reference character 7<sup>b</sup>. This beveling or cutting away of the inner edge of the running surface

7 of the head 6 may assume different forms and shapes, but in all forms necessarily provides a well defined space, next to the insulation between the side and service rail heads, which accommodates and receives the spread or flow of the metal from the head of the auxiliary side rail. Hence, the said element 7<sup>b</sup> constitutes a spread-compensating surface which obviates the possibility of the metal from the side rail head flowing into metallic contact with the service rail heads thereby causing an electrical connection between the ends of the two running rails 1—1.

As above indicated, an important feature of the invention resides in the provision of means for adjusting the relative height of the auxiliary side rail member and the service rail, that is, to provide means for bringing the said side rail to the level of the service or running rail so that the joints, when constructed, can be made up so as to compensate for the varying heights of traffic-worn rail ends in the application of the joint to old rails. In the construction shown in Fig. 1, this adjustment may be effected by providing the rail supporting base 4 on its upper side with an inclined bearing face 8 with which engages the complementary inclined bearing face 9 of an adjusting wedge 10 which is interposed between the rail base 11 and the rail supporting base or base plate 4. The said adjusting wedge 10 is shown as consisting of a sheet of insulation, but such insulation may consist of a thick wedge of wood or other material. The same serves as the base insulation for the joint, and after adjusting the said wedge 10 over the base plate to secure the proper relative height adjustment of the auxiliary rail 5 in relation to the service rail 1, the said wedge, if made of thin flexible insulation, is formed at one edge with an upturned fastening flange or lip 12 which is designed to be clamped between one edge of the base flange 11 of the rail and the inner angle of the joint shoe or chair 3, with the object in view of holding said wedge from displacement.

To complete the insulation of the form of joint just described an insulating strip 13 is interposed between the service rail ends and the carrying head 6 of the auxiliary rail, and the joint may be completed by arranging upon opposite sides of the service rail ends the filler blocks 14 and 15 and connecting the parts together with joint bolts 16. These bolts 16 are shown as being equipped at the inner sides of their heads and nuts with the metal backing washers 16<sup>a</sup>, the insulating washers 16<sup>b</sup> next to the metal washers, and with the insulating sleeves or bushings 16<sup>c</sup> extending through the bolt holes in the auxiliary side rail, and in the metal strap 8 usually arranged upon the side of the filler block 14 opposite the filler block 15. This completes an insulated joint somewhat on the general lines of the well known Weber type of insulated rail joint, while at the same time securing the added functions herein pointed out.

Referring to another form of the invention shown in Fig. 2, the height adjustment of the auxiliary bridging rail 5 may be provided for by employing a metallic adjusting wedge or wedge plate 17 placed upon the upper inclined surface of the base or base plate 4, and after being removed to the exact position required for the proper height of the auxiliary rail 5, can be rigidly held in such position by a fastening screw or equivalent device 18 passed through the base plate and engaging in a

threaded socket or mortise provided in the said wedge or wedge plate 17. In this construction the base insulation is provided for by interposing a base insulating sheet 19 between the horizontal upper face of the wedge 17 and the bottom of the rail base 11. This modification also suggests a construction wherein the filler block may be omitted between the service rails and the auxiliary side rail.

Another variation in the adjusting means for varying the height of the auxiliary side rail 5 is shown in Fig. 3 of the drawings, and consists in providing the rail supporting base 4 with a horizontal top bearing face 20 upon which is arranged a pair of overlapping matching, and reversely related, adjusting wedges 21, the upper one of which presents a horizontal top rest surface 22 for the rail base. These wedges 21 are also preferably made of insulating material so as to constitute a base insulation, and after adjustment are held fast to the base plate 4 by means of the fastening screw or bolt 23 passing through transversely disposed adjustment slots 24 in the two wedges near one edge thereof and engaging in the threaded opening in the base plate 4. A modification of this construction is possible by using one wedge of metal and one of insulation:

The modification shown in Fig. 5 involves the thought of providing the base plate 4 with the inclined bearing surface 8, previously referred to, and adjusting thereon a metallic wedge plate 25 held fast in its adjusted position through the medium of rivets 26 secured in the base plate 4. The wedge or wedge plate 25 presents a horizontal top rest surface 26<sup>a</sup> upon which is placed a base insulating sheet 27 provided at one edge with an upturned fastening or holding flange 28 held between the rail member 5 and the filler block 15.

Other modifications will readily suggest themselves to those skilled in the art and it will be understood that any 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. It will be further understood that in all forms of the joint the usual and necessary bolts, washers, and bolt insulation will be utilized in the usual and necessary places to provide for securing the joint to the track rails.

I claim—

1. In an insulated rail joint, the service rails, an auxiliary side rail bridging the joint, means beneath the rail bases for relatively adjusting the height of the auxiliary rail and service rails, and insulating means.

2. In an insulated rail joint, the service rails, a rail joint section comprising a rail supporting base and an auxiliary side rail, means, located between the said supporting base and service rail bases, for adjusting the height of the auxiliary rail relative to the service rails, means for maintaining said relative adjustment, and insulating means.

3. In an insulated rail joint, the service rails, a rail joint section having a base plate and an auxiliary side rail integral with said plate, means for adjusting the height of the auxiliary rail relative to the service rails, and insulating means.

4. In an insulated rail joint, the service rails, a joint shoe comprising a metallic base plate and an upstanding

auxiliary rail integral with said plate, adjusting means between the base plate and the rail bases for adjusting the height of the auxiliary rail relative to the service rails, and insulating means.

5. In an insulated rail joint, the service rails, a joint shoe comprising a metallic base plate and an upstanding auxiliary side rail integral with said plate, and insulation between the shoe and the service rails.

6. In an insulated rail joint, the service rails, a joint shoe comprising a base plate and an upstanding auxiliary side rail integral with said base plate and provided at its upper end with an inwardly and laterally deflected carrying head bridging the joint and arranged to carry the wheels thereover, and insulation between the service rails and the shoe.

7. In an insulated rail joint, the service rails, a joint chair having a base plate and a rigid upstanding auxiliary side rail bridging the joint, wedge adjusting means for adjusting the relative height of the auxiliary rail and means for insulating one rail from the other.

8. In an insulated rail joint, the service rails, a joint chair having a base plate and a rigid upstanding auxiliary side rail, wedge adjusting means for adjusting the relative height of the side rail, fastening means for said wedge adjusting means and means for insulating one rail from the other.

9. In an insulated rail joint, the service rails, a joint shoe having a base plate and an upstanding auxiliary side rail, an adjustment wedge located between said base plate and the service rails and means for insulating one rail from the other.

10. In an insulated rail joint, the service rails, a joint shoe having a base plate and an upstanding auxiliary side rail, and an adjustment wedge located between said base plate and the service rails, fastening means for said adjustment wedge and means for insulating one rail from the other.

11. In an insulated rail joint, the service rails, a joint shoe having a base plate and an upstanding auxiliary side rail, said base plate being provided at its upper side with an inclined bearing face, wedge adjusting means cooperating with said inclined bearing face and means for insulating one rail from the other.

12. In an insulated rail joint, the service rails, a joint shoe having a base plate and an upstanding auxiliary side rail, said base plate being provided at its upper side with an inclined bearing face, wedge adjusting means cooperating with said inclined bearing face, fastening means for said wedge adjusting means and means for insulating one rail from the other.

13. In an insulated joint, the service rails, a joint shoe having a metallic base plate, and an upstanding auxiliary side rail, said base plate being provided at its upper side with an inclined bearing face, an adjusting wedge adjustably fitted upon said bearing face, fastening means for securing said wedge in its adjusted position, and insulation interposed between the wedge and the rail base.

14. In an insulated rail joint, the service rails, an auxiliary side rail having a continuous clearance face for worn car wheels, and insulating means.

15. In an insulated rail joint, the combination of the service rails, an auxiliary side rail, and insulation interposed between the heads of said service and side rails, said side rails having a carrying head constructed at one side with a top edge portion arranged at one side of, and spaced from, the adjacent insulation to accommodate the spread or flow of the auxiliary rail head.

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

BENJAMIN WOELHAUPTER.

Witnesses:

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