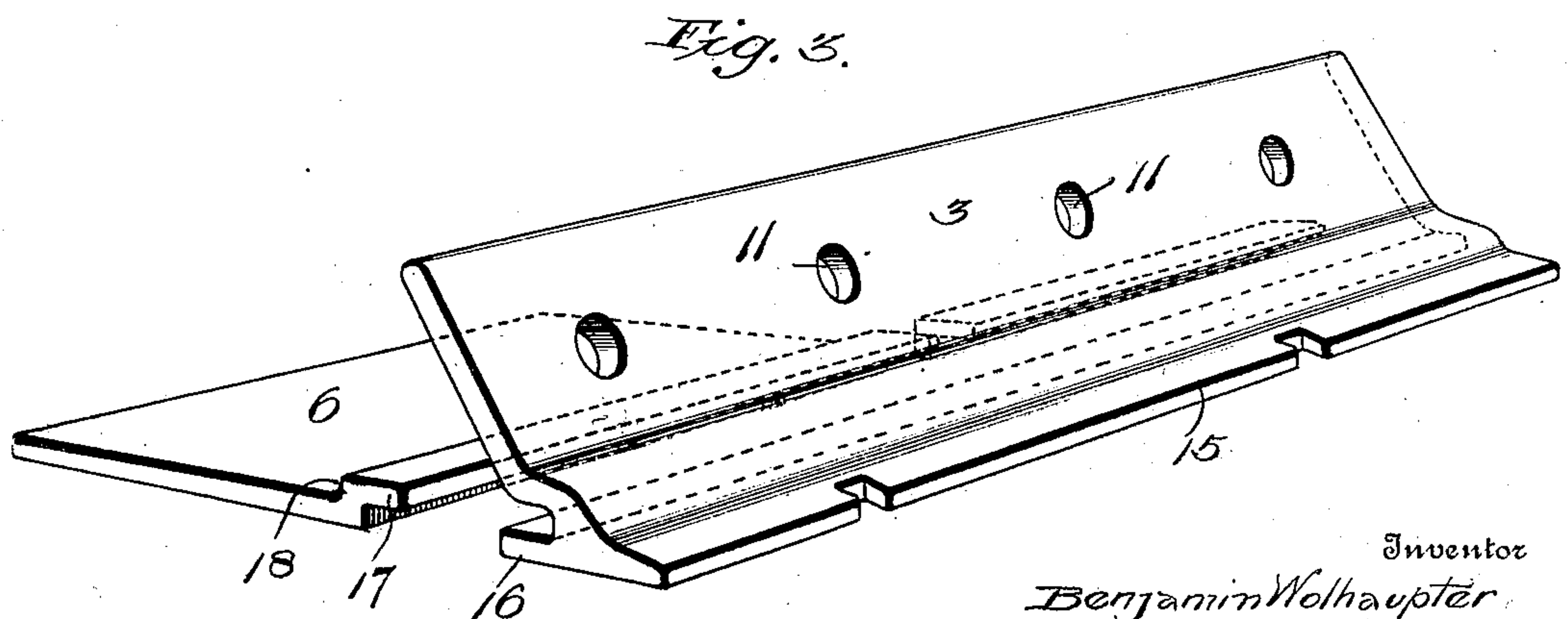
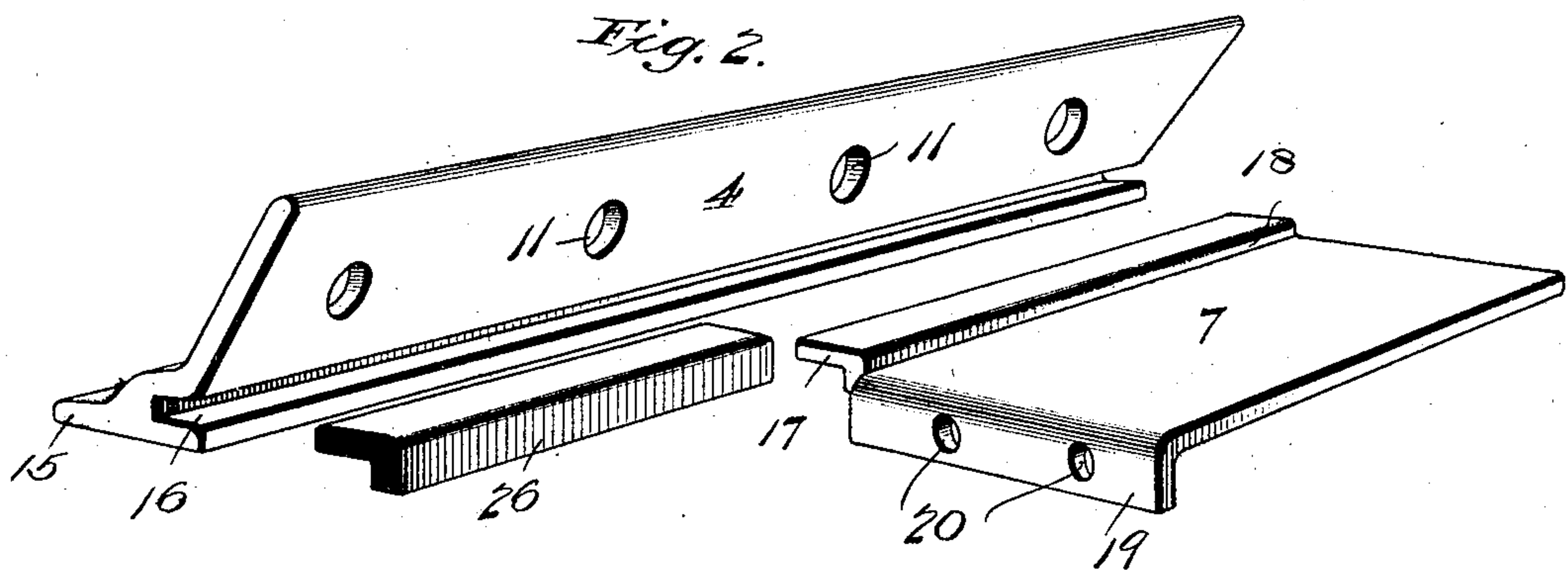
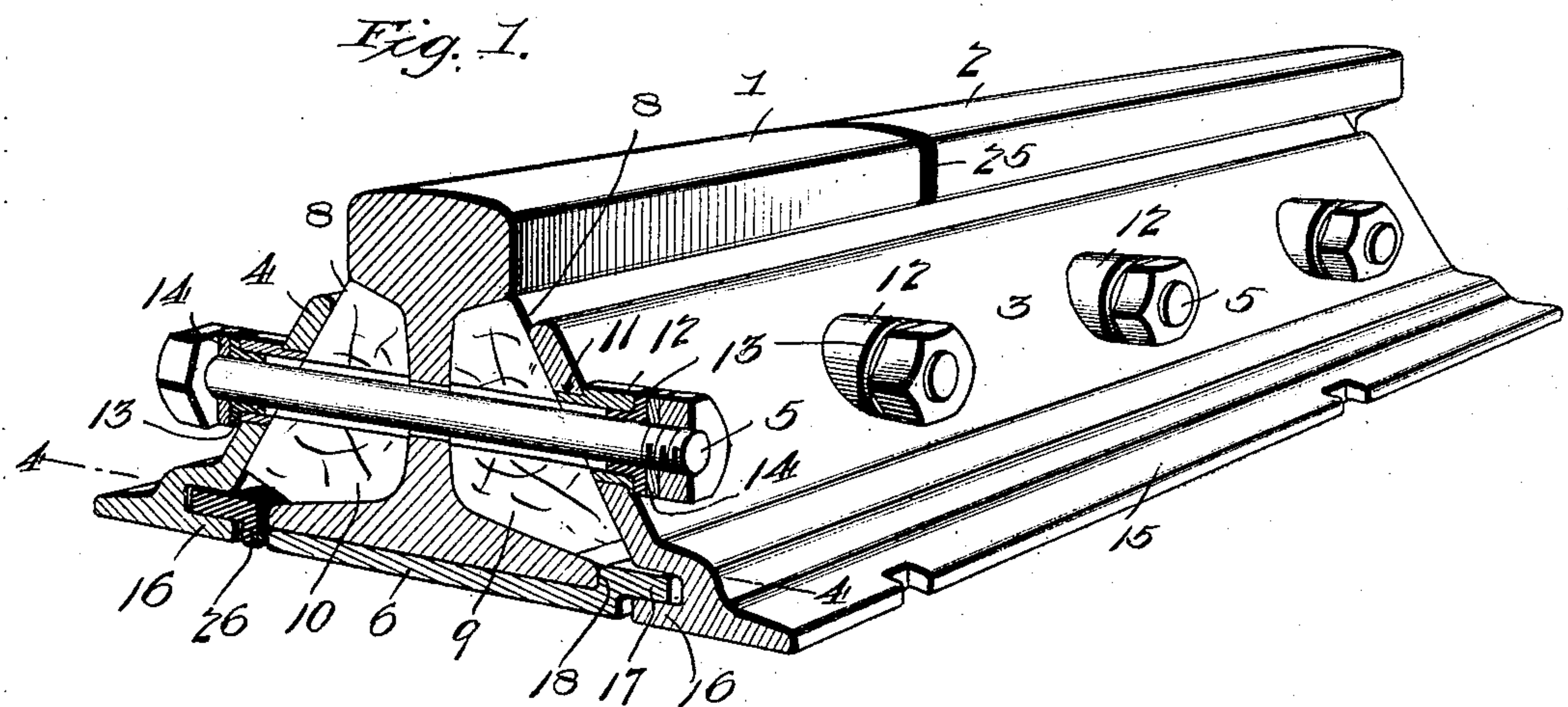


No. 868,520.

PATENTED OCT. 15, 1907.

B. WOLHAUPTER.
INSULATED RAIL JOINT.
APPLICATION FILED DEC. 8, 1906.

3 SHEETS—SHEET 1.



Witnesses
J. L. Mockner
R. C. Braddock

Inventor
Benjamin Wolhaupter

By *S. P. Wolhaupter.*
Attorney

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3 SHEETS—SHEET 2.

Fig. 4.

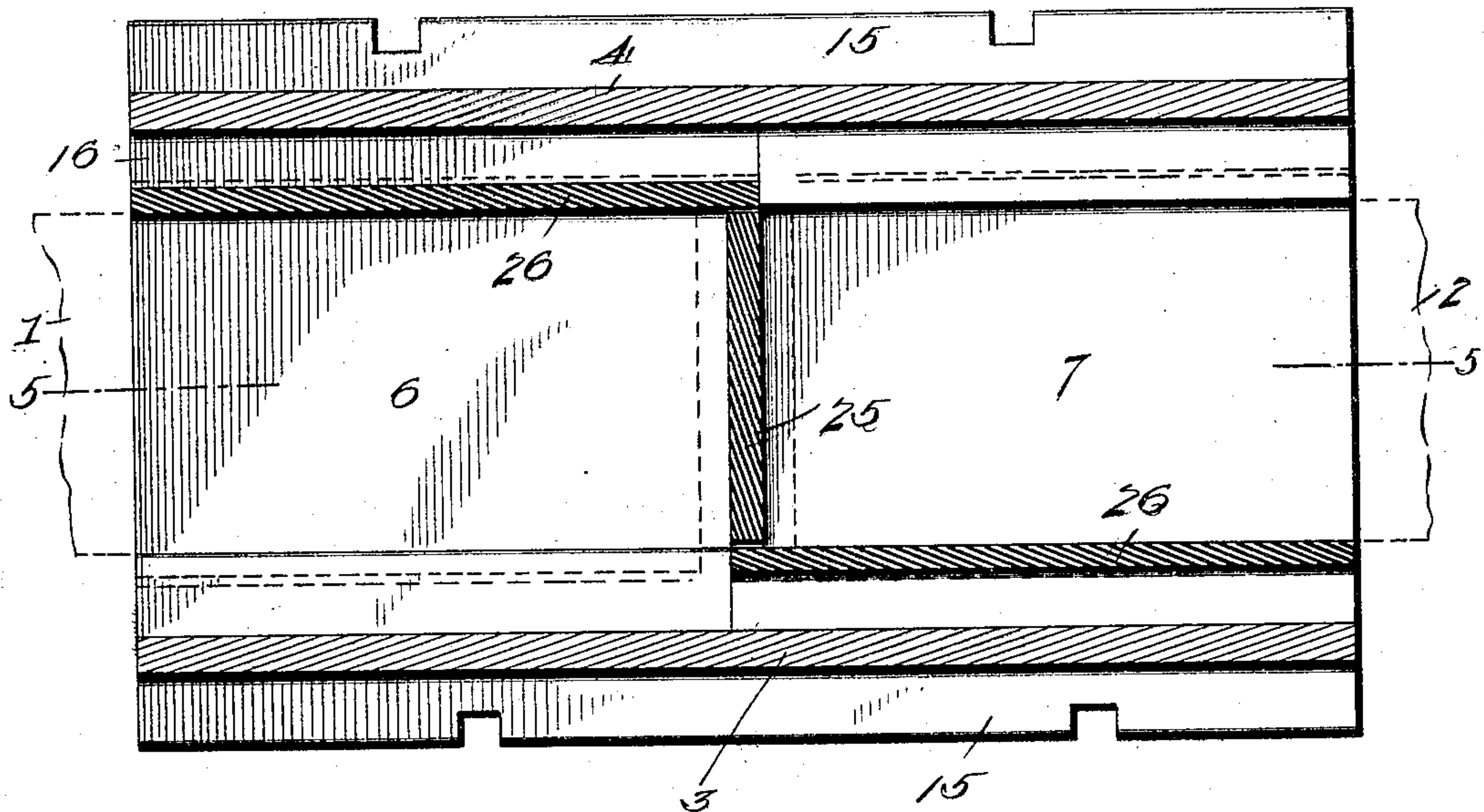
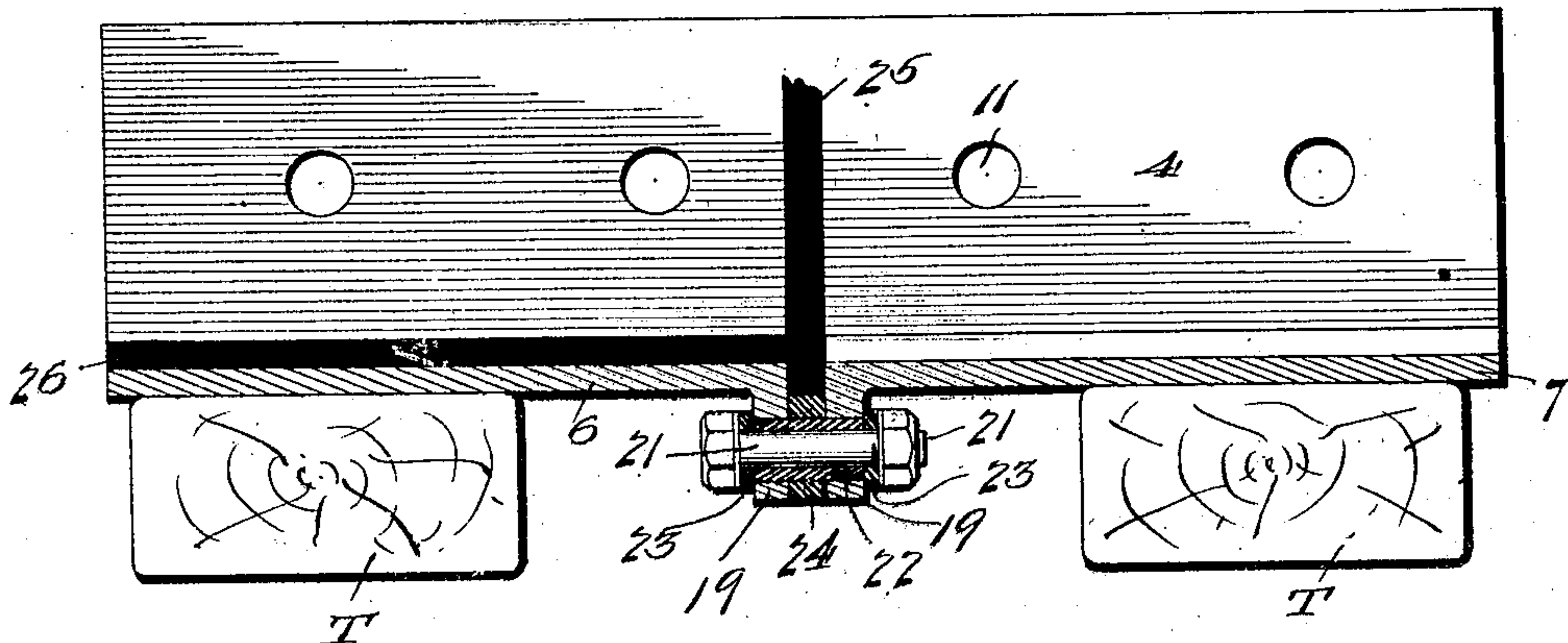


Fig. 5.



Inventor

Benjamin Wolhaupter

Witnesses

T. L. Mordant
R. C. Braddock

By

S. P. Wolhaupter

Attorney

No. 868,520.

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B. WOLHAUPTER.
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3 SHEETS—SHEET 3.

Fig. 6.

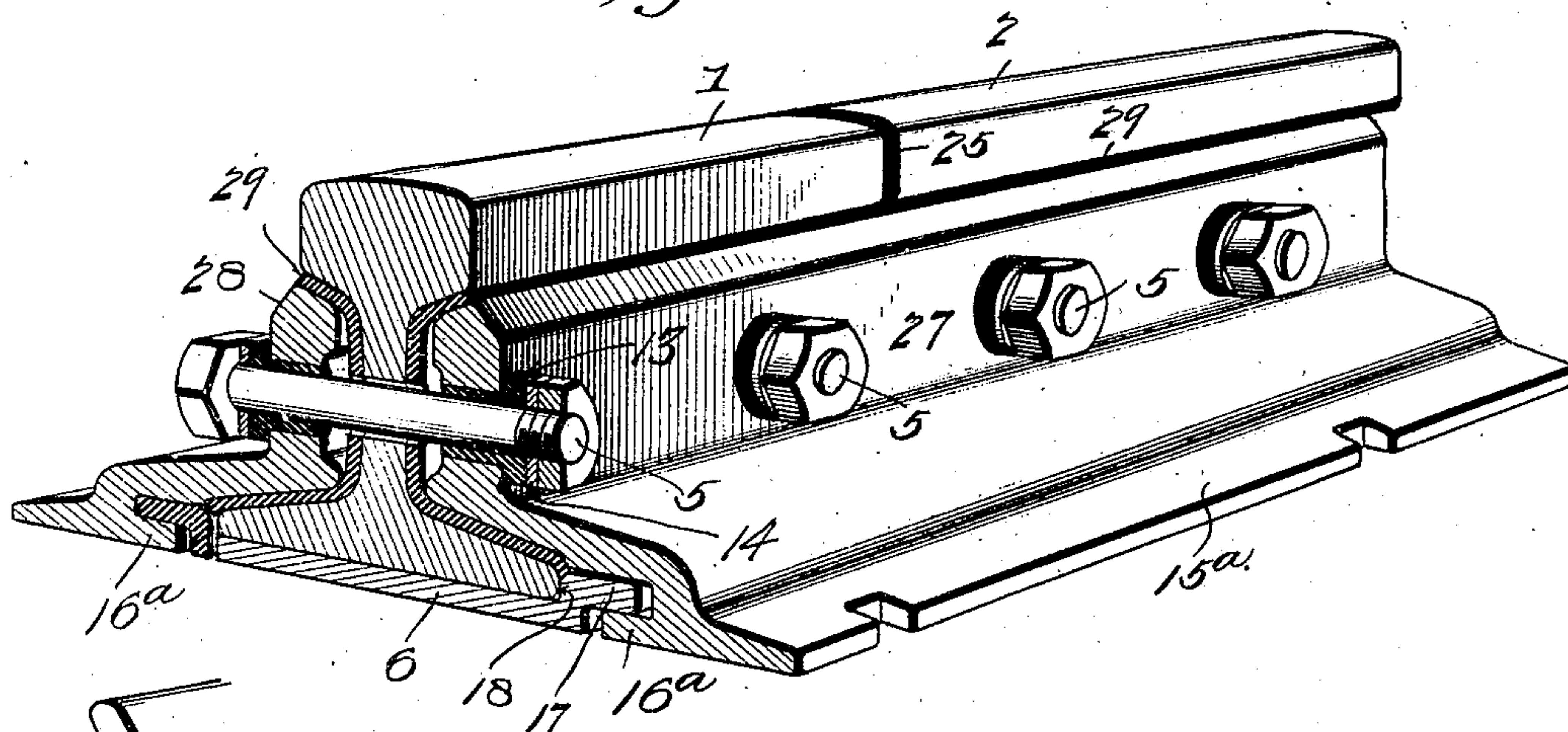


Fig. 9.

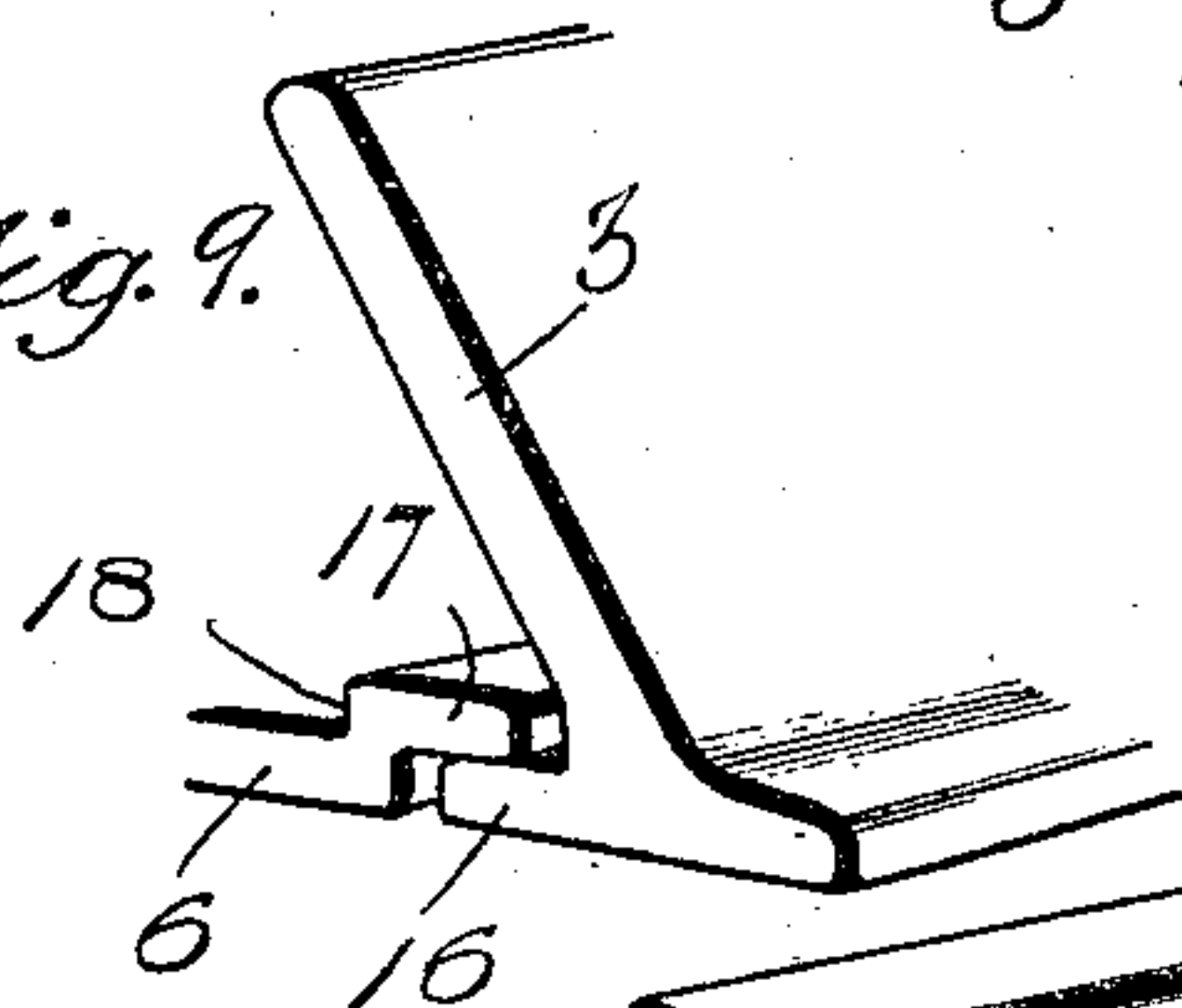


Fig. 7.

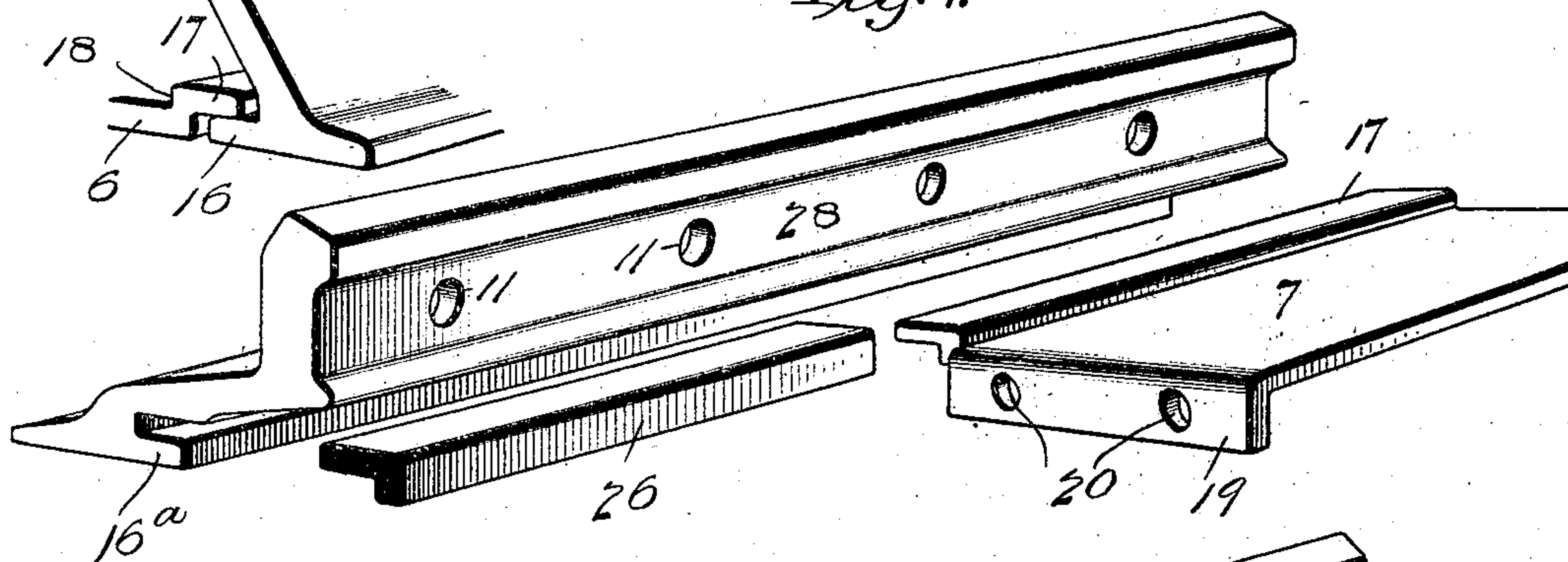
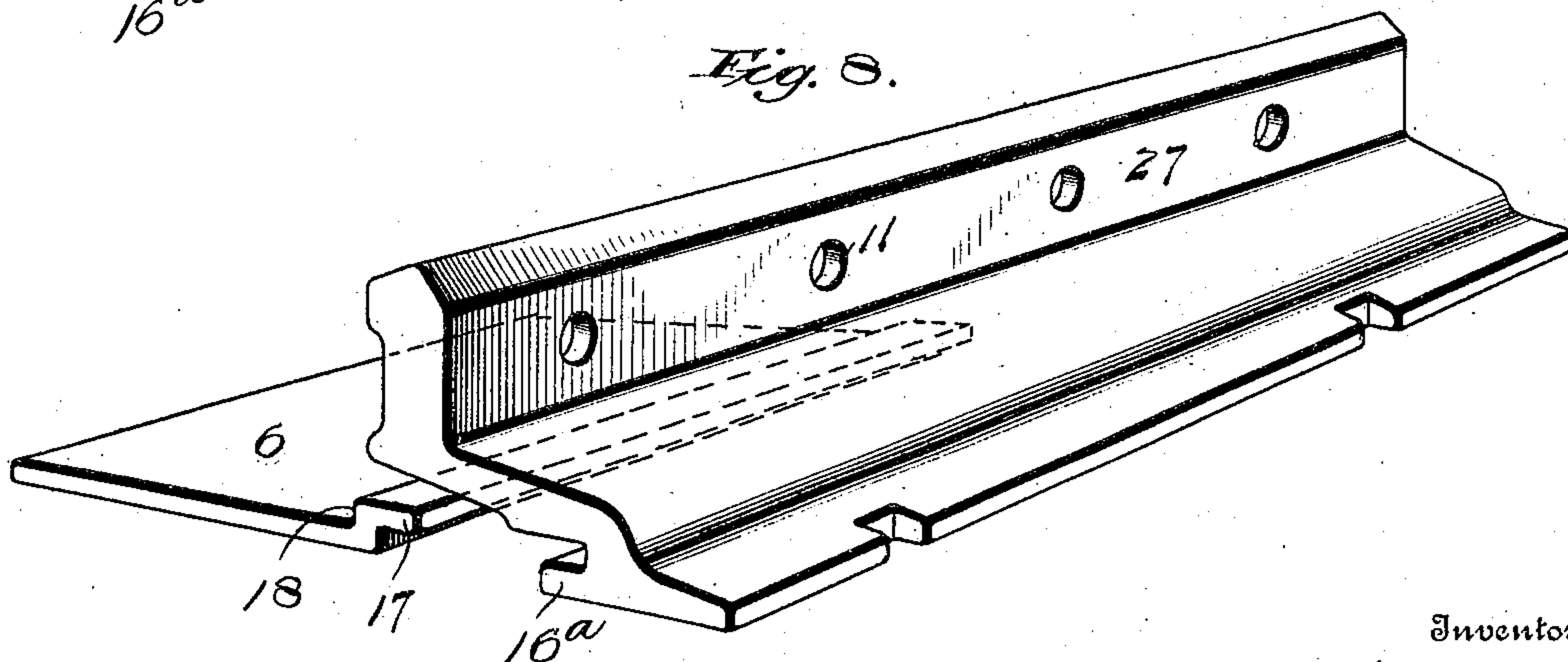


Fig. 8.



Witnesses

J. L. Kresner
R. C. Braddock.

Inventor

Benjamin Wolhaupter

By

D. P. Wolhaupter
Attorney

UNITED STATES PATENT OFFICE.

BENJAMIN WOLHAUPTER, OF NEW YORK, N. Y., ASSIGNOR TO THE RAIL JOINT COMPANY,
OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

INSULATED RAIL-JOINT.

No. 868,520.

Specification of Letters Patent.

Patented Oct. 15, 1907.

Application filed December 6, 1906. Serial No. 346,643.

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 the subject of insulated rail joints and has special reference to that type of joints
10 wherein the rails rest upon a metallic base support without the interposition of base insulation, thereby entirely relieving the insulation from the load or weight of the passing train.

The invention primarily has in view an improved
15 construction of insulated rail joint embodying a sectional base plate feature whereby a separate supporting section of base plate is provided for each rail end, while at the same time admitting of a thorough and complete insulation of the joint throughout without placing the
20 insulation in positions where it would receive the load or weight of the trains. In this connection, the invention contemplates a construction which can be advantageously utilized with a separate or detachable base plate of the same general type as that embodied in the
25 well known Wolhaupter rail joint, while at the same time providing for a novel and effective inter-reinforcing and intersupporting of the various elements making up the joint to insure a firm and strong base support for each rail end.

Other general objects to be attained by the present
30 invention are the same as those carried out in connection with the forms of insulated joints disclosed and claimed in companion applications filed November 8, 1906 and bearing Serial Numbers 342,523 and 342,524.

The essential features of the invention involved in
35 adapting a sectional or two-part base plate construction to joints of the type wherein the base plate is a separate and detachable member of the joint, are necessarily susceptible to embodiment in various modifications
40 without departing from the scope of the invention, but for illustrative purposes there are shown in the drawings certain preferred practical modifications of the invention.

In these drawings: Figure 1 is a sectional perspective
45 view of a rail joint constructed in accordance with the present invention and illustrating the improvements in their application to a form of rail joint which is a modification of both the Weber and Wolhaupter types of joints. Fig. 2 is a detail perspective view of one of
50 the side girder members of the joint and the elements directly associated therewith, said view showing the related parts separated. Fig. 3 is a view similar to Fig. 2 showing the other side girder member and the elements directly cooperating therewith in separated
55 relation. Fig. 4 is a horizontal sectional plan view on

the line 4—4 of Fig. 1. Fig. 5 is a longitudinal sectional view on the line 5—5 of Fig. 4, illustrating the insulated coupling connection between the separate base sections, and also showing the one end base insulating feature in combination with the insulating end
60 post which is utilized as an insulating medium between the adjacent inner edges of the separate base plate sections. Fig. 6 is a sectional perspective view showing the improvements in their application to a type of joint embodying opposite angle bars as the side girder
65 members of the joint. Figs. 7 and 8 are views similar to Figs. 2 and 3 respectively of the opposite side girder members and their related parts of the form of joint shown in Fig. 6 of the drawings. Fig. 9 is a detail perspective view showing a modification that may be re-
70 sorted to in providing for the support of one edge of a base plate section upon the inner edge portion of a side girder member.

Like reference characters designate corresponding
75 parts in the several figures of the drawings.

A prominent and distinctive feature of the present invention resides in constructing a rail joint with a sectional or two-part base plate and so arranging the parts that each section of the base plate affords a metal supporting base for each rail end, while at the same time
80 the separate sections of the base plate are coupled or fastened together so as to constitute in effect one base plate common to both rail ends in the sense that each section of the base plate has a support from both of the
85 side girder members or side joint plates, thereby securing an effective reinforcing and strengthening of the base support throughout. At the same time the sectional or two-part base plate construction referred to preserves that advantageous feature of the companion
90 applications mentioned, viz: that of each section of the base plate directly supporting one rail end and being adapted to afford the same a support on both sides of the meeting point of the rail ends without metallic contact or electrical connection with the other section of the base plate. This novel base plate construction can
95 be embodied in a variety of rail joint structures without affecting the essential features of the invention, but the improvements claimed are well exemplified in the forms of joints shown in the drawings and to which particular reference will now be made.
100

Referring to the form of insulated rail joint shown in Figs. 1 to 5 inclusive of the drawings, the said joint includes in its general organization the adjacent service or running rails 1 and 2, the oppositely arranged side joint plates 3 and 4, the joint bolts 5, and a sectional or
105 two-part base plate consisting of the separate individual base plate sections 6 and 7, each of which affords a direct metal bearing support for one of the rail ends. The term "side joint plates" in the sense employed in the present invention, refers to the side girder members
110

of the joint irrespective of the design or form of these members, so it will be understood that these girder members may consist of any of the conventional forms of side joint plates under the various terms applied thereto, such as angle bars, splice bars, bolt plates, and the like.

In the form of the invention shown in Fig. 1 of the drawings, the side girder members 3 and 4 are inclined from a vertical plane so as to engage with the correspondingly inclined outer bearing faces 8 of the oppositely located filler blocks 9 and 10 which are respectively arranged at opposite sides of the rail ends and interposed between the latter and side girder members 3 and 4. By reason of the complemental and contacting relation of the inclined bearing faces 8 of the filler blocks, and of the inclined girder members 3 and 4, it will be understood that when the said girder members are drawn together, or tightened upon the blocks 9 and 10 through the action of the joint bolts 5 or otherwise, the tendency of the girder members is to slide upward upon the said bearing faces 8 with the result of exerting a lifting force upon the base plate 6—7 so as to draw the same into firm supporting contact with the rail bases.

In adapting the inclined side girder members 3 and 4 to the present invention, it is necessary to provide an even bearing support for the heads and nuts of the joint bolts 5, as well as to secure a thorough insulation thereof. To secure this result, a practical construction which may be resorted to is shown in Fig. 1 of the drawings and consists in fitting within each bolt hole 11 of the girder members an offstanding metal bevel washer 12 of tubular form and affording upon its outer end a straight bearing for the flange or head of a flanged insulating bushing 13, between which latter and the heads and nuts of the bolts are interposed the usual metal backing washers 14. Of course other insulating expedients may be resorted to for insulating the bolts from the girder members and rails without departing from the present invention.

Each of the girder members 3 and 4 is provided at its lower edge with an outturned spiking flange 15 and with an inside inwardly projecting base supporting flange 16 preferably extending longitudinally from end to end thereof and providing a supporting surface for one of the sections of the base plate. This base supporting flange 16 may be provided in various ways and may be of less extent than the girder member. Also, the said flange may be variously formed, such for instance, as simply consisting of a plain inwardly projecting flange or lip as shown in detail in Fig. 9 of the drawings, or being embodied in more of a grooved formation as shown in other figures of the drawings, but in any design, and with the flange 16 of any proper length, the same affords a direct supporting surface upon which a section of the base plate is held and carried.

In designing the individual sections of the base plate for engagement with and support by the girder members, it is preferable to provide each of said sections of the base plate along one of its longitudinal side edges with an angled offset holding flange 17 arranged in parallelism to the top portion of the plate section and producing along its inner edge a rail bearing shoulder 18 lying above the plane of the top surface of the section of the base plate and adapted to engage against the edge

of the rail base or base flange as plainly shown in Fig. 1 of the drawings in a manner similar to the detachable or separate base plate of the Wolhaupter type of rail joint.

The offset holding flange 17 of each section of the base plate is adapted to take over and rest upon the supporting flange 16 of the side girder or girder member with which such plate section is associated. This engagement between each section of the base plate and its girder member may be said to be a separable interlocking engagement inasmuch as the same provides for the locking of the section of the base plate in place when the girders are drawn together, while at the same time permitting the section of the base plate to be detached or separated from its girder in contradistinction to those types of joints wherein the individual sections of the base plate are rigid or integral with the side plate or girder member as described and illustrated in the companion applications aforesaid.

In carrying out the present invention, the same preserves the idea of each section of the base plate having a direct supporting engagement with only one of the side girders. Hence, with this arrangement, the section of the base plate for each side girder member is usually of a length approximately equaling one-half the full length of said girder member, though this may be varied to suit conditions where the joint is to be applied. However, in all forms of the invention, each section of the base plate is located wholly at one side of the transverse center of its supporting girder so that such girder carries a section of the base plate along one end portion thereof.

The separate sections of the base plate 6—7 are preferably duplicates in design and arrangement and are disposed respectively at opposite sides of the transverse central line of the joint as plainly shown in Figs. 4 and 5 of the drawings. Hence, by reason of this arrangement, the separate sections of the base plate lie in the same horizontal plane and in spaced matching relation so that each of the same receives and supports directly thereon one of the rail ends.

As already indicated, one of the practical features of the present invention resides in so constructing the joint that each section of the base plate will have the benefit of a support from both girders. This is accomplished by providing a fastening connection between the inner adjacent ends of the separate sections of the base plate which are respectively supported upon the opposite girders. This fastening connection is intended to provide a rigid union between the two sections of the base plate, while at the same time thoroughly insulating such sections so that each of the same may be said to afford each rail end a support on both sides of the meeting point of the rail ends without metallic contact or electrical connection with the corresponding section of the base plate. A construction which may be utilized for accomplishing this result involves the provision of each section of the base plate at its inner end with a pendent transversely disposed terminal flange 19 which necessarily acts as a stiffening girder or flange while at the same time being provided with one or a plurality of bolt holes 20 receiving the coupling bolts 21 which are arranged to connect the terminal flanges 19 of both plate sections 6 and 7. A thorough insulation of the flanges 19 and of each bolt may be secured

by incasing the latter in an insulating bushing 22 extending into the bolt holes 20, and by arranging insulating washers 23 between the heads and nuts of the bolt and the adjacent faces of the bolt flanges 19. Also, an insulating block or collar 24 is interposed between the bolt flanges 19 and receives therethrough the insulating bushing 22. This construction is plainly shown in Fig. 5 of the drawings and serves to secure a rigid joint between the two sections of the base so as to produce in effect a single base plate common to both rail ends, while at the same time thoroughly insulating the two sections of the base plate from each other.

In the construction described, with each section of the base plate resting upon a track tie T, it will be obvious that the base plate 6—7 performs the functions of a single base plate for both rails, while at the same time being supported by two girders and by two ties. This secures a most effective inter-reinforcing and intersupporting of the parts and greatly increases the supporting effect of the individual sections of the base plate for each rail end.

To complete the insulation of the joint described, the insulating end post 25, between the rail ends 1 and 2, may be arranged to extend below the bases of the rails so as to project into the gap or interval between the inner adjacent ends of the sections 6 and 7 of the base plate, thus securing an effective insulation at this point. Complete insulation between the free longitudinal edge, or the unattached longitudinal edge, of each section of the base plate and the opposite girder may be secured by employing an insulating angle strip 26 whose horizontal flange may be conveniently held for support on the flange 16 of the girder, while the pendent flange of the said strip lies in the interval between said girder and the opposing unattached edge of the opposite section of the base plate. The two insulating strips 26 are arranged along what may be termed the non-supporting ends of the girders and hence are disposed in diagonally opposite relation as shown in Fig. 4 of the drawings, thereby providing a one-end insulation between each girder and the opposing section of the base plate.

The essential features of the invention above pointed out may be embodied in various forms of joints, such for instance as the type of joint shown in Figs. 6 to 8, inclusive, of the drawings. In this embodiment of the invention the same general features are preserved as already set forth, but the side girder members, instead of being in the form of inclined side plates cooperating with filler blocks, are of the angle bar type, the same being designated by the reference characters 27 and 28 respectively. The angle bar girders 27 and 28 may be of the general conventional form and each of the same is provided at its lower edge with a spiking flange 15^a and an insulated base supporting shoulder 16^a preserving the same functions and cooperating with the same parts as the corresponding elements described in connection with the construction shown in Figs. 1 to 5 inclusive of the drawings.

In adapting the improvements of the angle bar type to the joint shown in Fig. 6 of the drawings, a proper insulation between the angle bars or girders and the sides of the rails is secured by the employment of the usual sheet insulation 29 interposed between the rail sides and the angle bars or girders so as to thoroughly

insulate the adjoining faces of the rails, and of the said bars. Also, in this construction, any suitable expedients may be resorted to for insulating the joint bolts 5, but for illustrative purposes there is shown substantially the same insulating expedients, with the exception of the bevel washers 12, as shown in connection with the heads and nuts of the bolts in Fig. 1 of the drawings. In other respects, the form of joint shown in Fig. 6 of the drawings is substantially the same in all respects as the form illustrated in Fig. 1, and hence similar reference characters will apply to similar parts in the two forms.

Other modifications will readily suggest themselves to those skilled in the art, and it will 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. In an insulated rail joint, the rails, the side girders, a sectional base plate supported by the two girders and each section of which supports thereon one rail end only, and insulating means. 85
2. In an insulated rail joint, the rails, the side girders, a sectional base plate each section of which receives thereon one rail end only and which is connected directly with one girder but supported from both girders, and insulating means. 90
3. In an insulated rail joint, the combination with the rails and ties, of the side girders supporting two sections of base plate, each section affording one rail end only the support of the ties on both sides of the meeting points of the rails without contact with the other base section, and insulating means. 95
4. In an insulated rail joint, the combination with the rails and ties, of the side girders each of which supports a base plate section receiving thereon one rail end only and affording such rail end the support of both girders and of the ties without contact with the other base section, and insulating means. 100
5. In an insulated rail joint, the rails, side girders each carrying a base plate section separable therefrom, each base section receiving thereon one rail end only and affording such rail end a support from both girders on both sides of the meeting point of the rails without contact with the corresponding base section, and insulating means. 105
6. In an insulated rail joint, the rails, side girders each supporting a base plate section separable therefrom and arranged to receive thereon one rail end only, each base section being supported from the opposite girder through its companion section, and insulating means. 110
7. In an insulated rail joint, the rails, the side girders, a sectional base plate supported by and separable from the girders, each section of base plate receiving thereon one rail end only, and insulating means. 115
8. In an insulated rail joint, the rails, the side girders, a sectional base plate consisting of coupled sections having a supporting engagement respectively with the opposite girders and each section receiving thereon one rail end only, and insulating means. 120
9. In an insulated rail joint, the rails, side girders each supporting a detachable base plate section receiving thereon one rail end only, and insulating means. 125
10. In an insulated rail joint, the rails, side girders each supporting a detachable section of base plate receiving thereon one rail end only, and insulation interposed between said sections of base plate. 130
11. In an insulated rail joint, the rails, side girders each supporting a section of base plate separable therefrom, and each of said base sections receiving thereon one rail end only, insulation between the girders and rails, and means for insulating said base sections. 135
12. In an insulated rail joint, the rails, side girders, a base plate comprising two sections, means for securing such sections together mechanically, and means for insu- 140

lating such sections electrically with the supporting girders.

13. In an insulated rail joint, the rails, and the joint proper having a base plate comprising two sections, means 5 for securing such sections together mechanically, and means for insulating such sections electrically.

14. In an insulated rail joint, the rails, and the joint proper having a base plate comprising two sections, each of which receives thereon one rail end only, means for se- 10 curing such sections together mechanically, and means for insulating such sections electrically.

15. In an insulated rail joint, the rails, the supporting girders, a base plate comprising two sections each of which receives thereon one rail end only, means for securing 15 such sections together mechanically, and means for insulating such sections electrically with the supporting girders.

16. In an insulated rail joint, the rails, side girders each supporting a section of base plate separable therefrom and 20 receiving for support thereon one rail end only, and a one end insulation between each girder and the opposing base plate section.

17. In an insulated rail joint, the rails, the side girders, a sectional base plate, each section of which base plate re- 25 ceives thereon one rail end only, and diagonally opposite one end insulation between the base plate sections and the girders.

18. In an insulated rail joint, the rails, the girders hav- ing base supporting flanges and a sectional base plate con- 30 sisting of separate sections, each of which receives thereon one rail end only and has a supporting engagement with the flange of one girder, a fastening connection between the separate base sections, and insulating means.

19. In an insulated rail joint, the rails, side girders each 35 having a supporting flange, a sectional base plate consist- ing of separate sections, each of which is supported at one

edge upon the flange of one girder, a coupling connection between the base plate sections, and insulation supported upon the flange of one girder and interposed between the 40 latter and the adjacent edge of the opposing section of base plate.

20. In an insulated rail joint, the rails, the side girders, and a sectional base plate having a support from both girders, and each section of which base plate receives 45 thereon one rail end only, and an insulated coupling con- nection between the separate base plate sections.

21. In an insulated rail joint, the rails, the side girders, and a sectional base plate supported from both girders and consisting of separate sections each of which receives 50 thereon one rail end only and is provided at its inner end with a terminal flange, and an insulated coupling con- nection between the terminal flanges of the separate sections.

22. In an insulated rail joint, the rails, side girders, a sectional base plate supported from both girders and com- 55 prising separate coupled base plate sections, insulating means for the base plate sections and for the side girders, insulating means for the girders and rails, and an insu- lating end post arranged to have its base interposed be- tween the base plate sections.

23. In an insulated rail joint, the rails, inclined side 60 girders, a sectional base plate carried by the girders and each section of which plate receives thereon one rail end only, filler blocks having inclined faces opposing the girders, the joint bolts, and insulating means.

In testimony whereof I hereunto affix my signature in 65 the presence of two witnesses.

BENJAMIN WOLHAUPTER.

Witnesses:

KATHERINE McNALLY,
E. A. VAN DEUSEN.