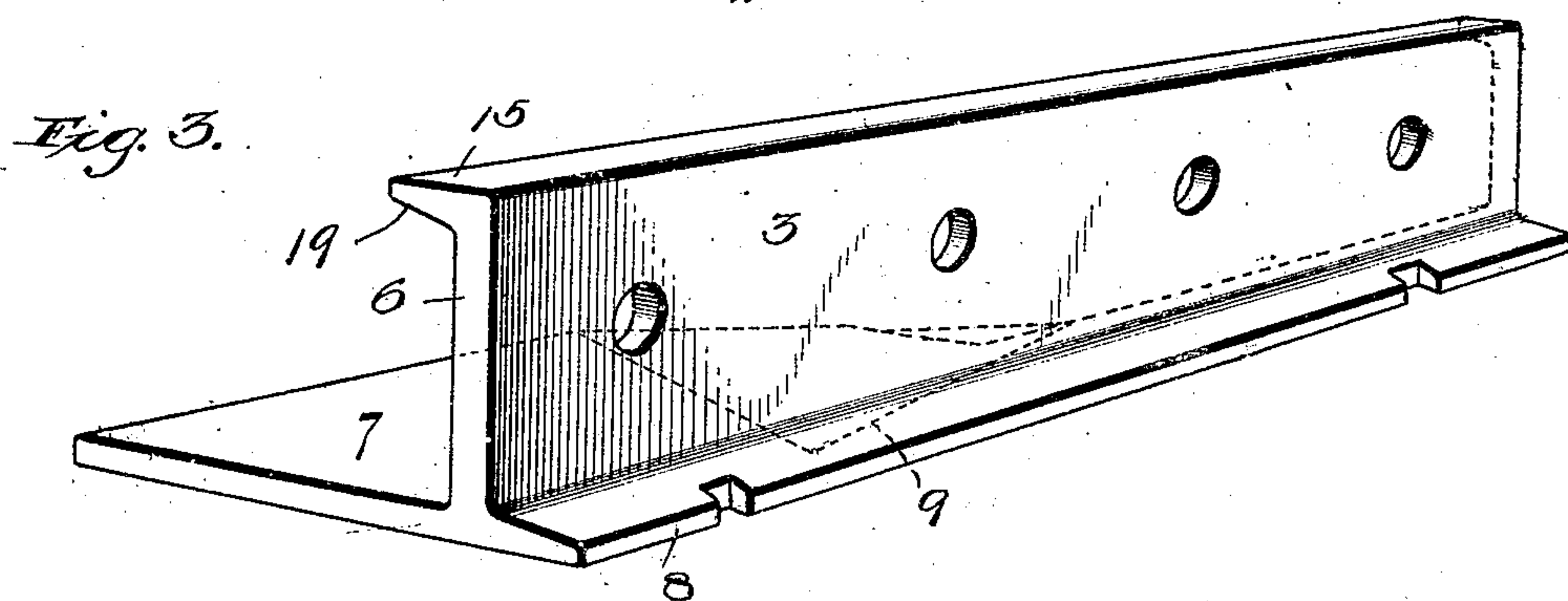
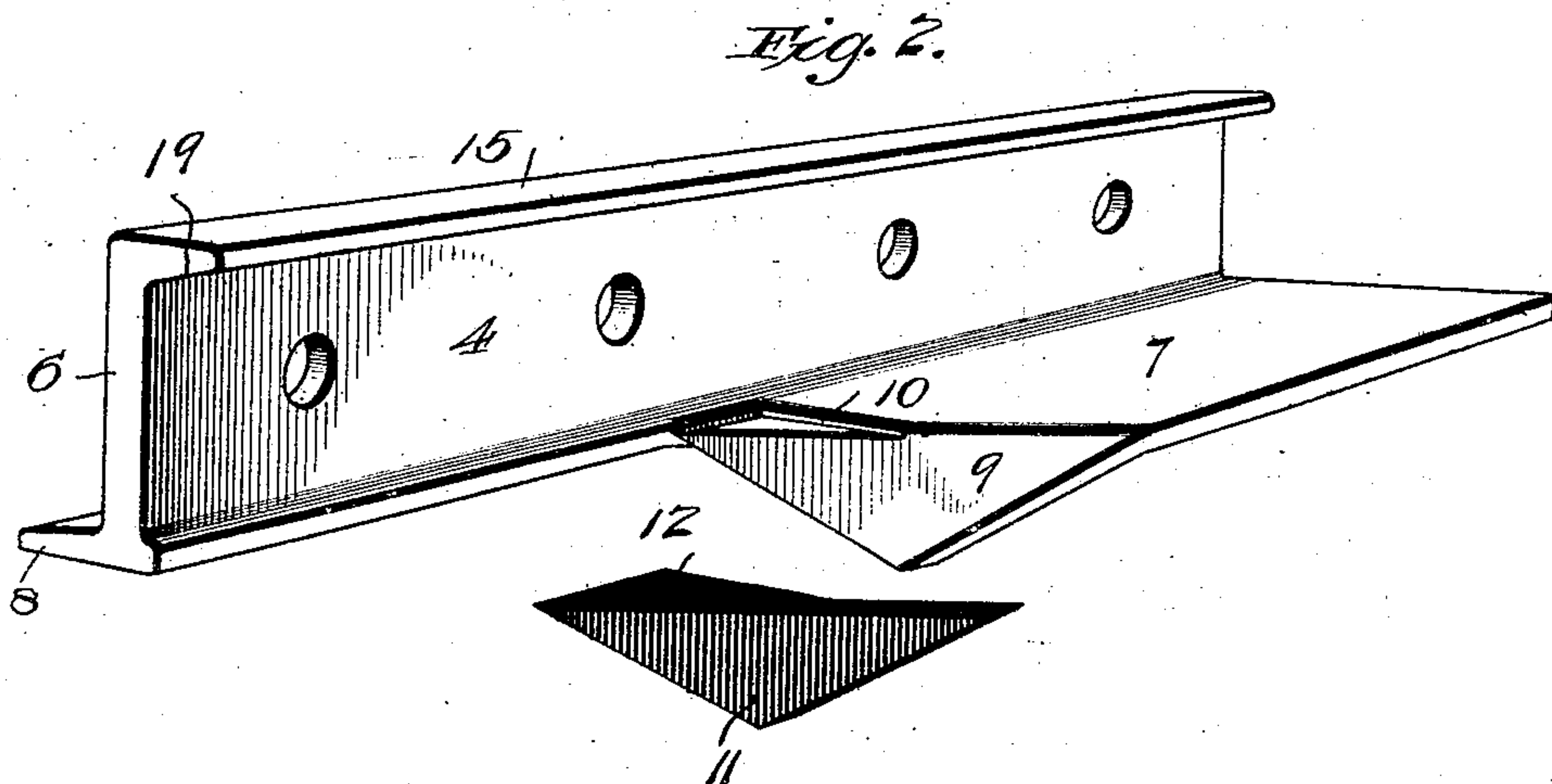
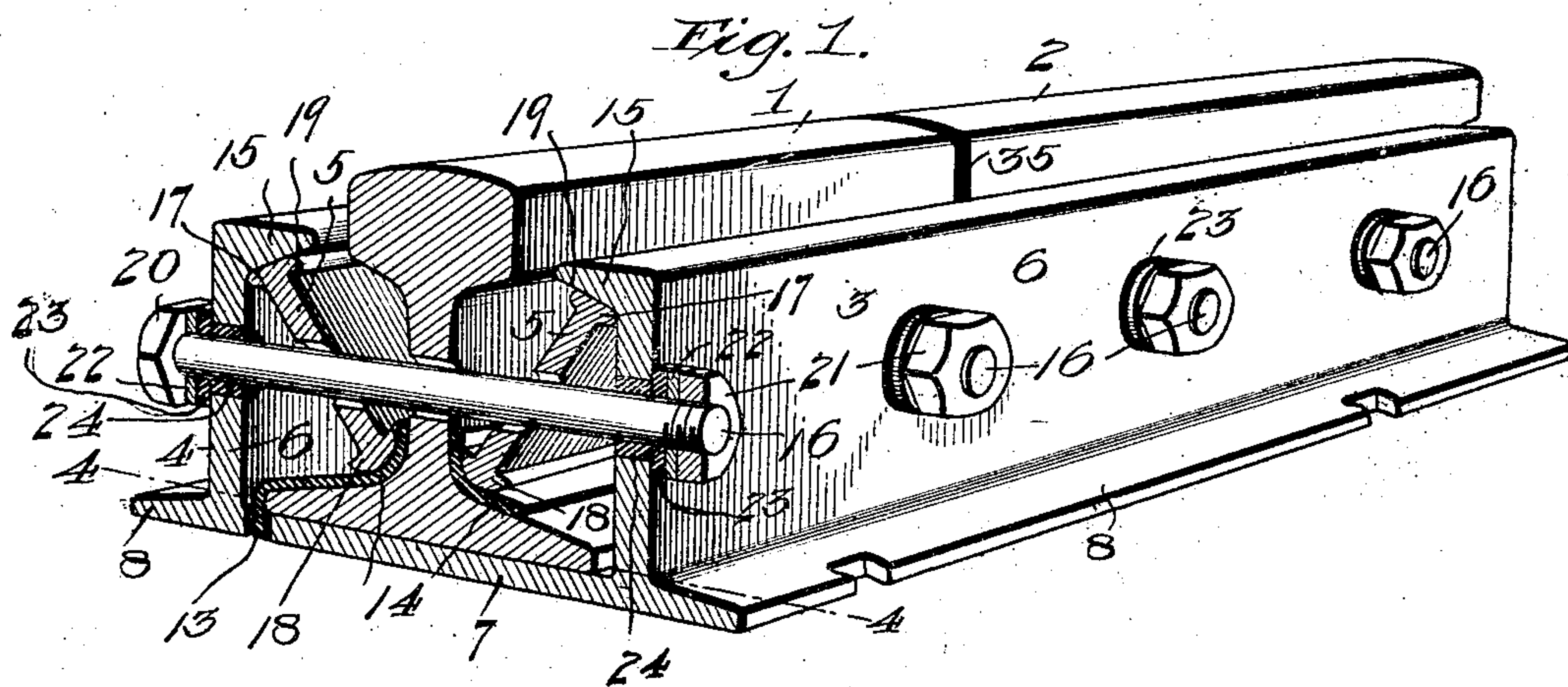


No. 868,384.

PATENTED OCT. 15, 1907.

B. WOLHAUPTER.
INSULATED RAIL JOINT.
APPLICATION FILED JAN. 26, 1907.

4 SHEETS—SHEET 1.



Witnesses

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4 SHEETS—SHEET 2.

Fig. 4.

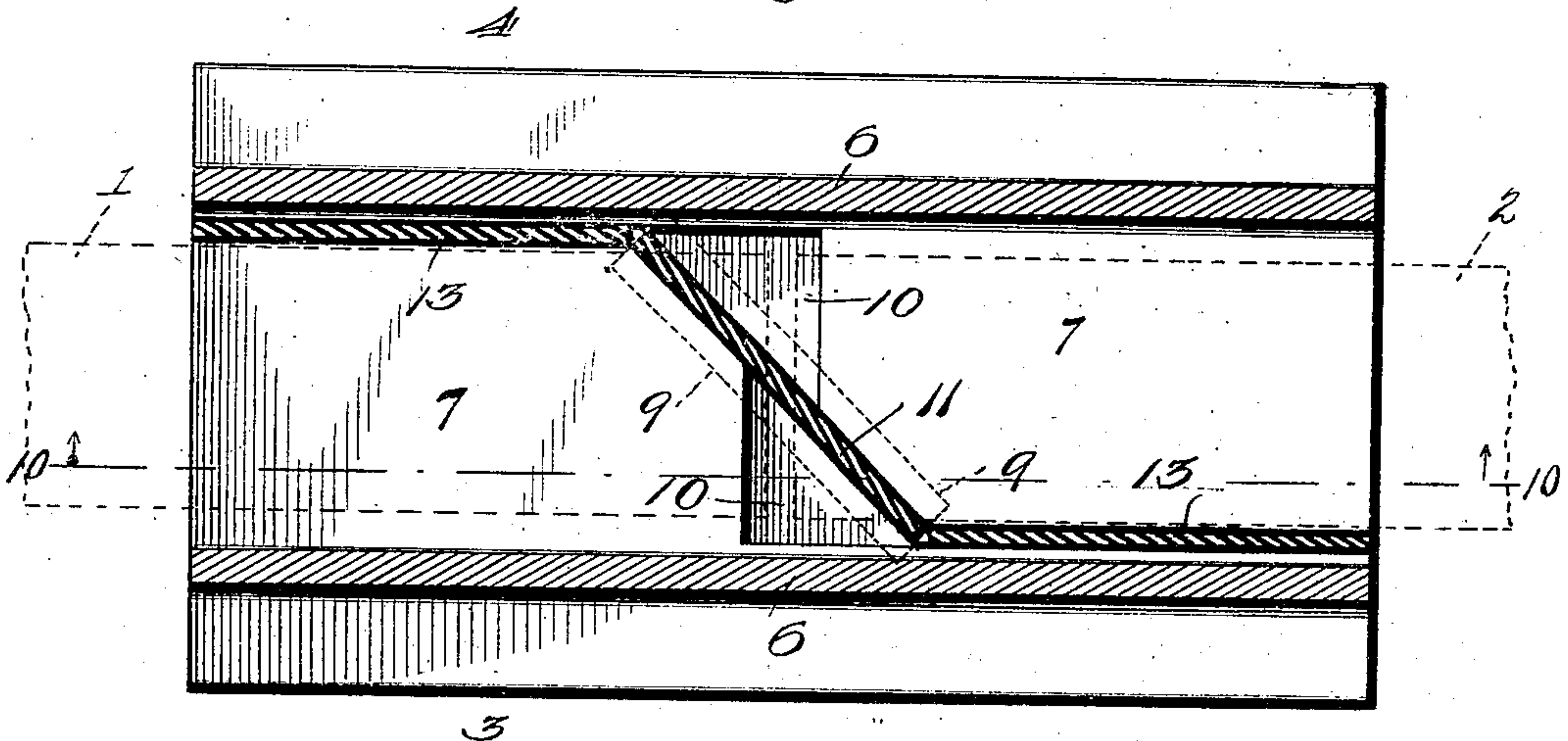
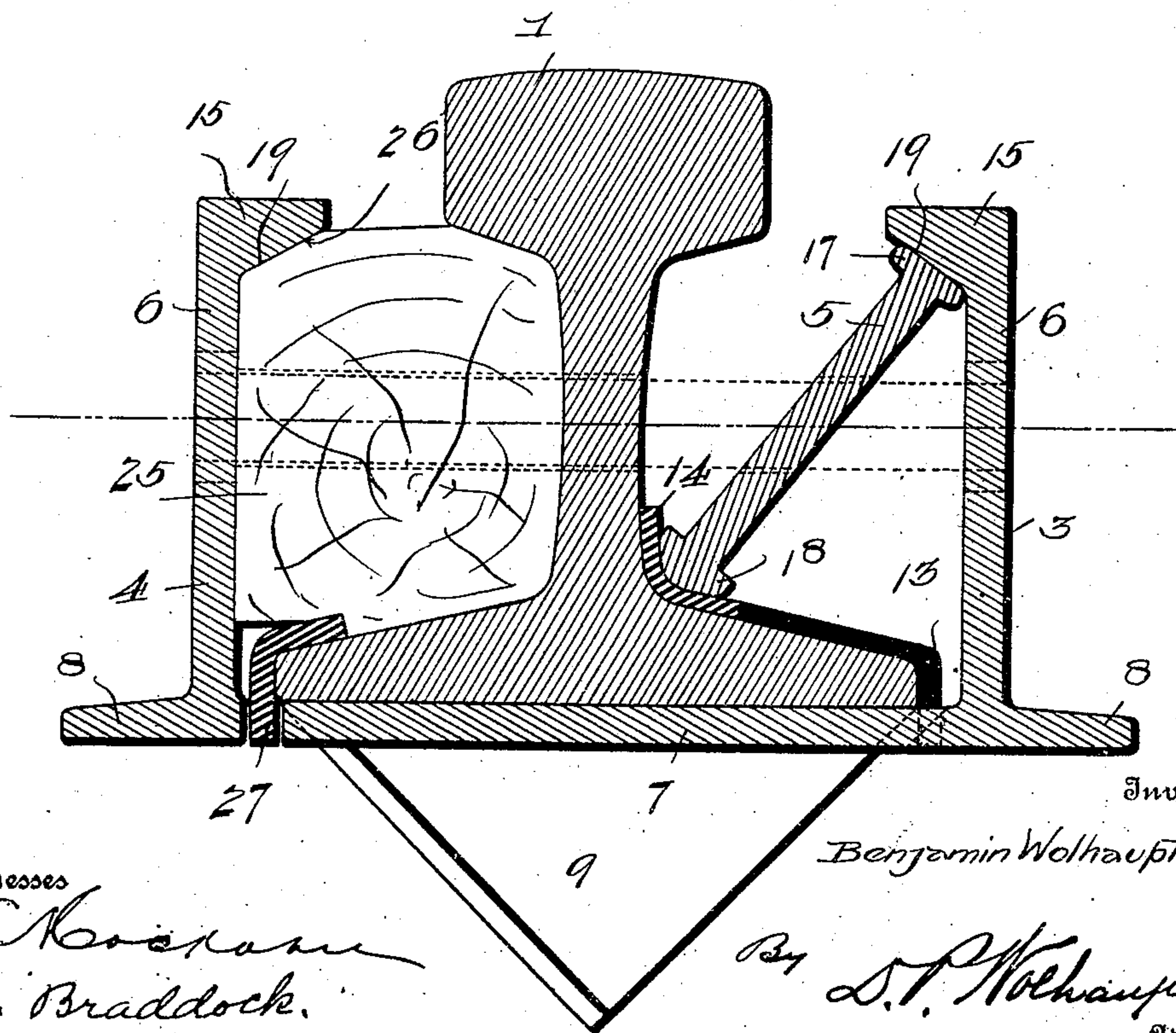


Fig. 5.



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4 SHEETS—SHEET 3.

Fig. 6.

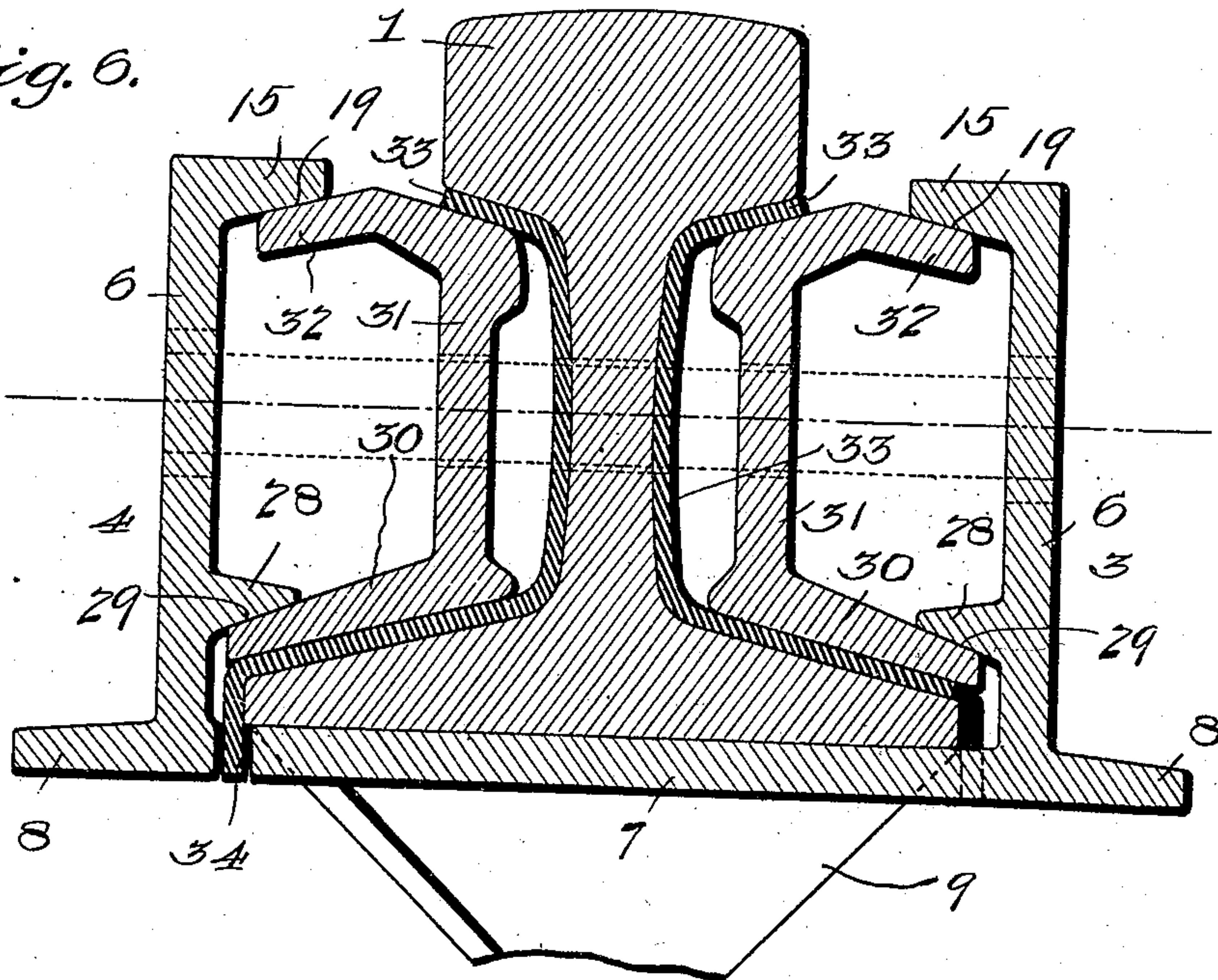


Fig. 7.

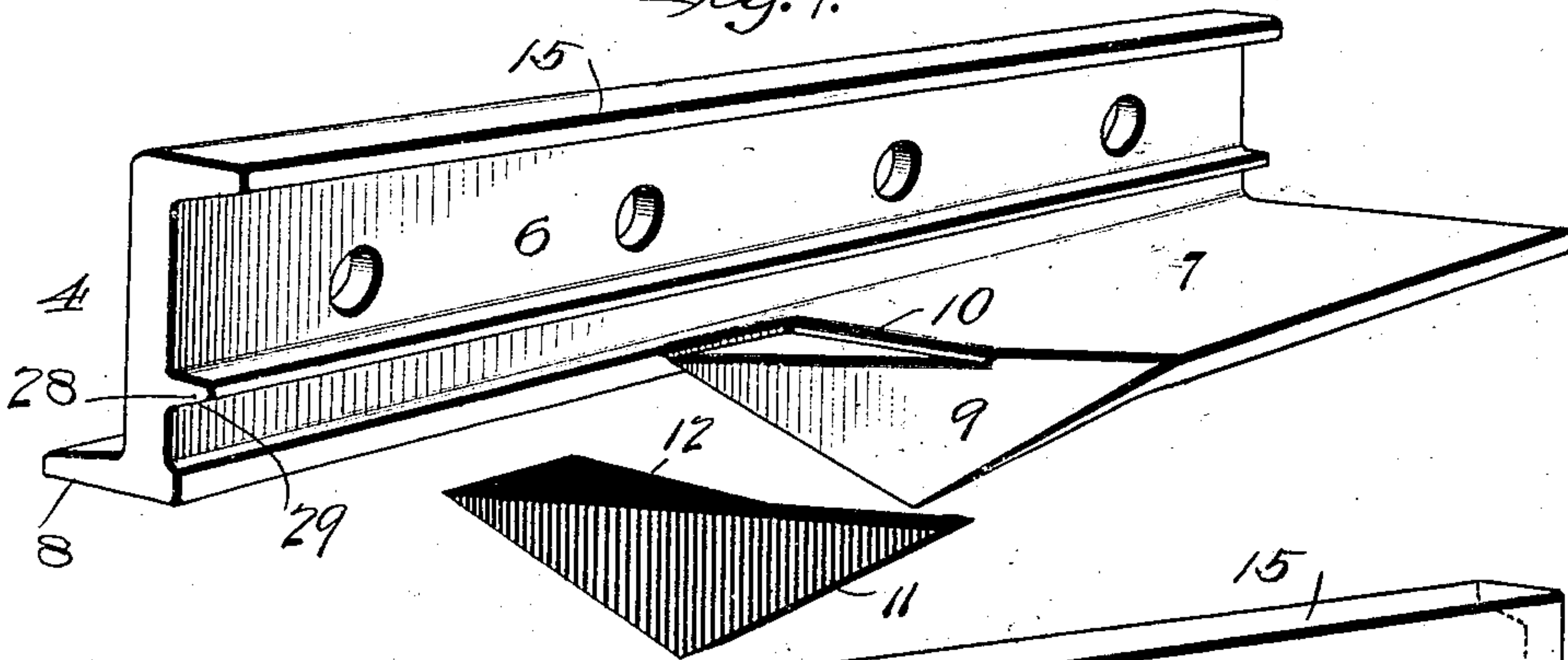
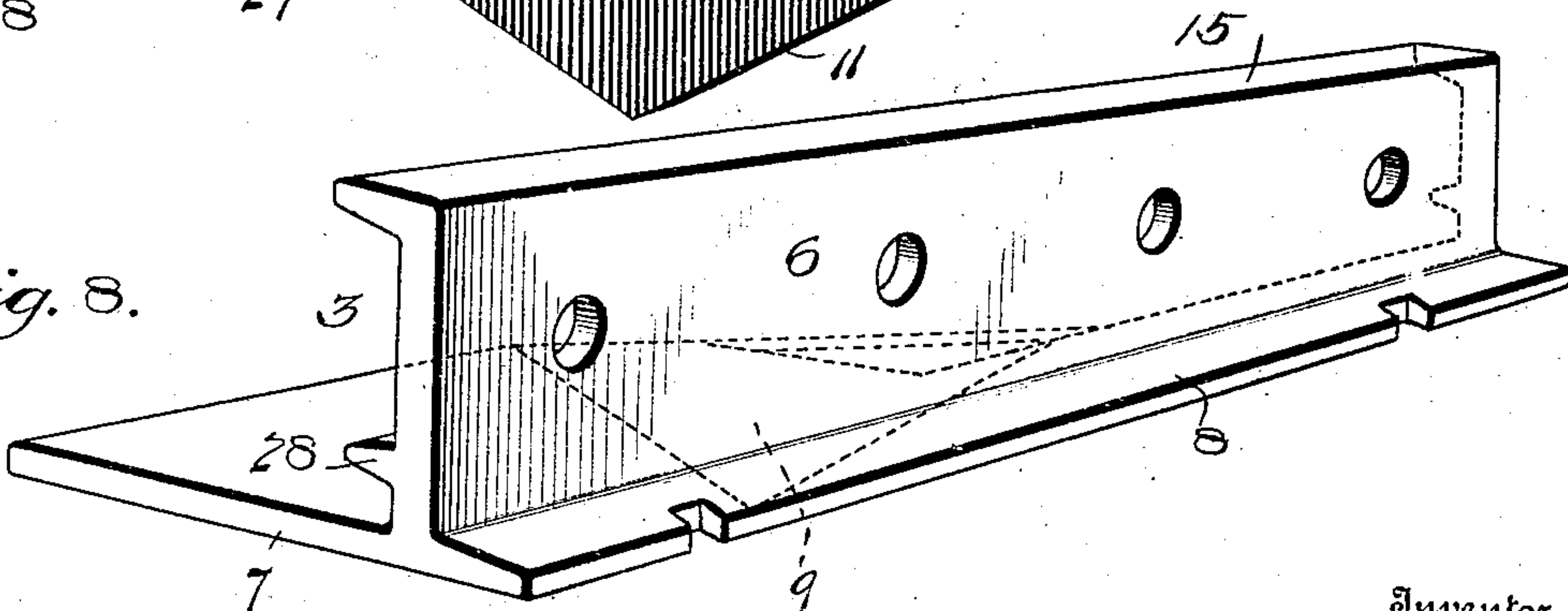


Fig. 8.



Witnesses

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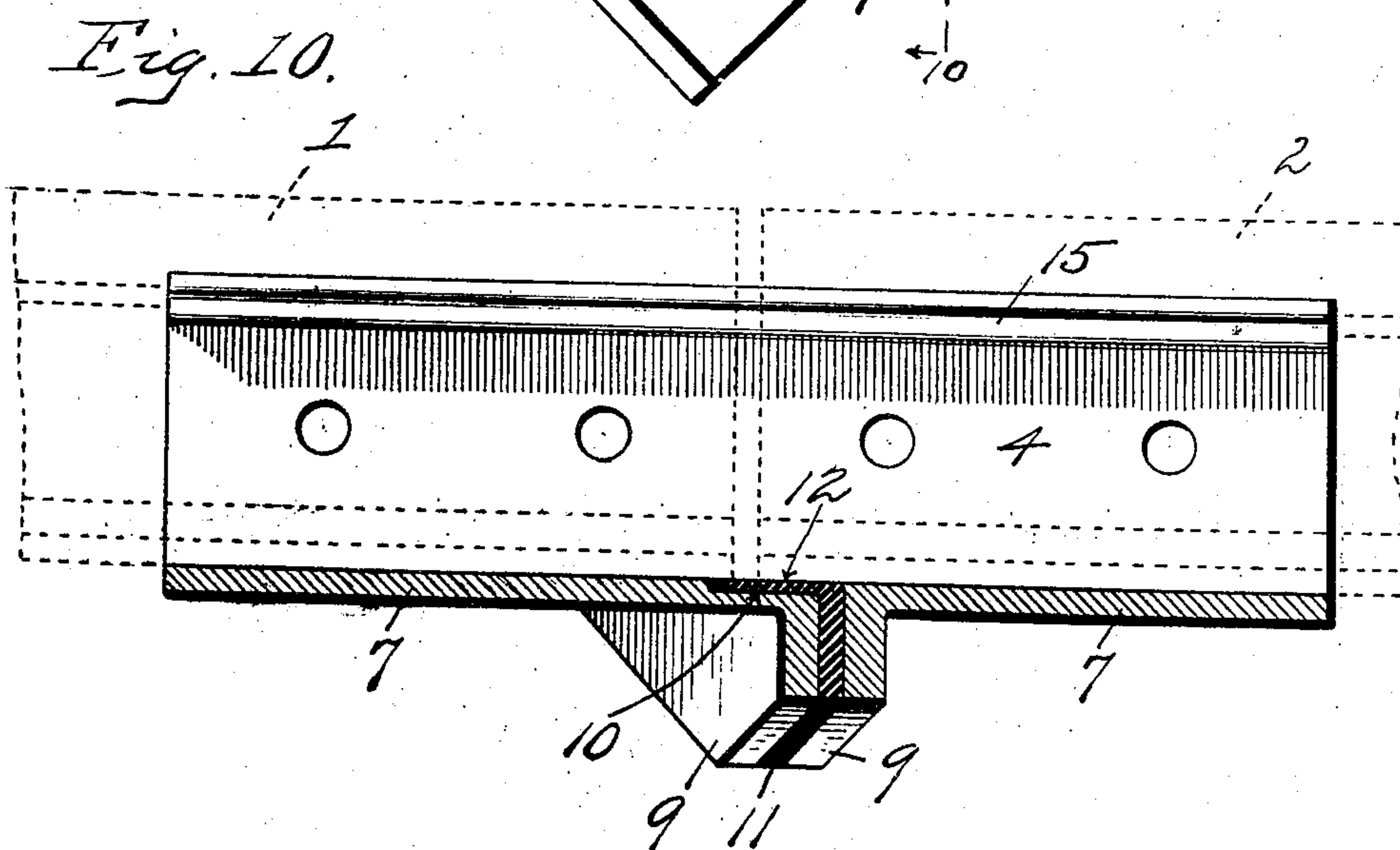
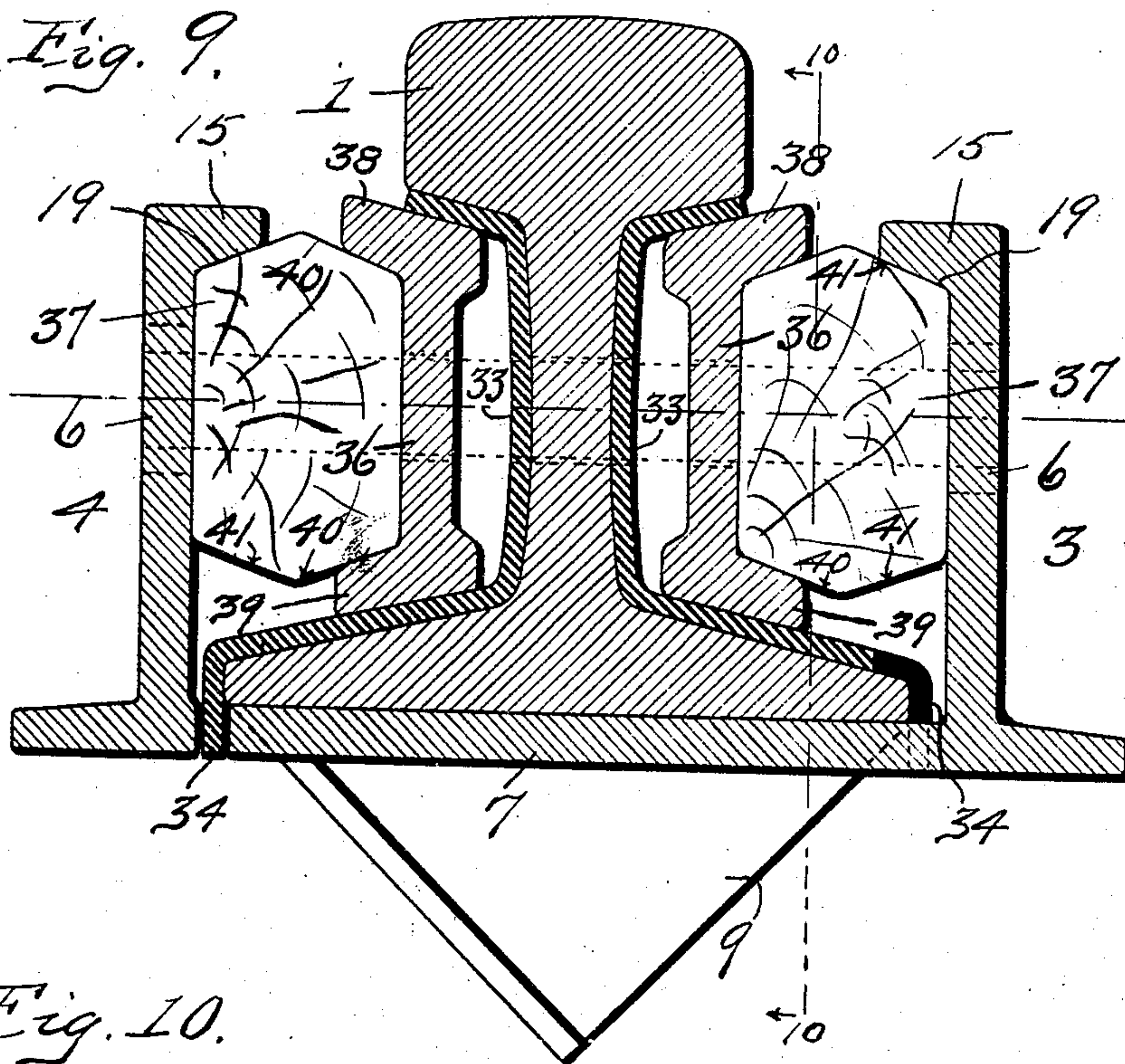
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4 SHEETS—SHEET 4.



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. 868,384.

Specification of Letters Patent.

Patented Oct. 15, 1907.

Application filed January 26, 1907. Serial No. 354,284.

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 that class of insulated rail joints embodying a two-part or sectional base plate
10 whereby a separate supporting base or base plate is provided for each rail end, while at the same time providing for such an insulation of the joint that there is no insulating material which is required to carry the load or weight of the passing trains.

15 A special object of the present invention is to provide certain novel and practical improvements in the design and construction of the individual base plate sections to secure a more effective and complete reinforcement thereof, and also to adapt the two-part base
20 plate feature to forms of rail joints wherein definite and positive means are provided for exerting a downward pressure upon the rails in order to hold the same down to the base plates, and at the same time to hold both rails in unison against upward thrust.

25 Other general objects of the invention are the same as those carried out in connection with the forms of insulated joints disclosed and claimed in a companion application filed November 8, 1906, Serial No. 342,523.

30 With these and 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
35 carrying out the objects above indicated, are necessarily susceptible to structural modification without departing from the scope thereof, but a few of the preferred embodiments of the invention are shown in the accompanying drawings, in which:

40 Figure 1 is a sectional perspective view of a form of rail joint embodying the present invention, in which the side clamp elements are in the form of strut bars. Figs. 2 and 3 are separated perspective views respectively of the opposite joint shoes, and also illustrating
45 a form of end base insulation that may be utilized between the inner spaced ends of the separate base plate sections. Fig. 4 is a base plan view on the line 4—4 of Fig. 1, showing the matching relation of the separate base plate sections and also one means of insulating the
50 said sections from each other, and each section from the opposite joint shoe. Fig. 5 is a cross sectional view showing a modified structure of joint embodying the improvements contemplated herein. Fig. 6 is a similar cross sectional view of another form of joint embody-

ing the improvements claimed herein. Figs. 7 and 8
55 are separated perspective views, respectively, of the opposite joint shoes employed in the construction of joint shown in Fig. 6. Fig. 9 is a cross-sectional view of another form of joint embodying the present invention. Fig. 10 is a vertical longitudinal sectional view
60 on the plane of section indicated by the line 10—10 in Figs. 4 and 9 of the drawings, illustrating the insulation between the inner end edges of the base sections held in the seat or depression opposite the one shown in Fig. 2; the view also indicating the rail positions in
65 dotted lines.

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

Referring to the exemplification of the invention shown in the group of figures 1 to 4 inclusive of the
70 drawings the rail joint proper includes the service or running rails 1 and 2, the oppositely arranged complementary joint shoes 3 and 4, and the side clamp elements 5 interposed between the upright members of the shoes and the rails.
75

The joint shoes are located respectively at opposite sides of the rails and each consists of an angle plate having an upright member 6 constituting the main side joint plate for the rail joint, and a horizontal base plate section 7 projecting inwardly from the lower edge of the member 6 and arranged to lie beneath a rail base. In the preferable construction of joint the upright member or side joint plate of each shoe is integral with the base plate member thereof, and at the outer corner of the shoe the same may be formed with a continuous reinforcing and
85 spiking flange 8 extending the full length thereof. Also, in carrying out the invention, the upright member 6 of each shoe may be arranged perpendicularly, or at an inclination, to the horizontal plane of the base plate section 7, according to the design and requirements of
90 the joint, but in all adaptations of the invention the base plate section 7 of each shoe is preferably of an extreme length approximately equaling one-half the full length of the rail joint members, so that each base plate section receives and supports thereon one rail end, and,
95 in order that the support for both rail ends may be alike, the separate base plates are duplicates in design and arrangement, and are located respectively at opposite sides of the joint between the meeting ends of the rails. In this connection it will be seen that the opposite
100 joint shoes 3 and 4 are constructed so that one of said shoes, designated by the number 3, has its base plate section 7 projected inwardly from one end portion thereof only, while the opposite shoe, designated by the number 4, has its base plate section projected in-
105 wardly from the correspondingly, but diagonally, opposite end portion of the same. Hence, each base plate section receives thereon one rail end to afford such rail

end a support on both sides of the meeting point of the rail ends without contact with the corresponding base or base plate section for the other rail end.

One of the prominent and distinctive features of the present invention resides in the strengthening and reinforcing of the overhanging or inner end edge portion of each base plate section. This is preferably accomplished by bending downward the inner triangular end portion of each base plate section to produce a pendent triangular reinforcing girder flange 9, which is disposed obliquely or at an angle to the transverse plane of the joint. This diagonal pendent triangular girder flange 9, at the inner end of each base plate section, serves to materially strengthen and support such end against the downward thrust of the rail end, and by reason of the diagonal or oblique disposition of the inner ends of the separate base plate sections and their girder flanges, the said inner end of each base plate section necessarily overlaps or projects across the plane of the joint between the meeting ends of the rails. In order that the rail end on one base plate section may not have a bearing on or metallic contact with the opposite base plate section, each of the latter has formed in one corner of its floor a triangular, or other suitably shaped, clearance depression 10 which is disposed beneath a corner of the rail end projecting past the opposite base plate section. The said clearance depressions 10 of the separate base plate sections 7 are arranged in transversely opposite positions to secure the function noted.

To secure an effective insulation between the inner spaced end edges of the separate base plate sections 7, an end insulating web 11 may be interposed between said ends and the girder flanges 9 pendent therefrom, and a convenient and practical expedient which may be resorted to for holding the insulation 11 in place is to provide the same, at its top edge, with a holding lip 12 which may be seated within one of the clearance depressions 10. The rail end over this clearance depression will therefore serve to hold such insulation in place without imposing the pressure of the load thereon. However, any practical insulation may be utilized between the inner end edges of the separate base plate sections 7.

The insulation between the longitudinal edge of each base plate section, and the opposite joint shoe may be conveniently provided for by interposing between these elements an insulating apron or flange 13 forming flange extensions from insulating strips 14 interposed between the inner corners of the rail bases and the side clamp elements 5. There is necessarily one of the insulating strips 14 at each side of the rails, and each strip is formed with a half-length apron or flange extension 13 for the purpose above indicated.

Referring to the side clamp elements 5, these elements, in the form of joint shown in Fig. 1, consist of diagonally arranged strut bars. Each of these strut bars is interposed between the pressure head 15 at the top edge of each joint shoe, and the diagonally opposite corner of the rail base, so that upon the tightening of the joint bolts 16, the said strut bars will have a tendency to rock inward upon their fulcrum points with the result of exerting a downward clamping action which serves to place a downward pressure upon the base flanges of the rails, thereby holding both rails on their bases in unison against upward thrust. In the

practical carrying out of this phase of the invention, it is preferable to provide each of the diagonally arranged strut bars 5 at the upper edge thereof with a bearing head 17 and at its lower edge with a bearing foot 18. The bearing foot of each strut bar has a fulcrum bearing at the corner of the base flange therebelow (on the interposed insulation), and the upper bearing head 17 is engaged by the under inclined bearing face 19 located on the under surface of the rib or flange forming the pressure head 15 at the top of the side joint plate of the shoe.

The joint bolts 16 are arranged to pass through the aimed bolt holes in the side joint plates 6, the strut bars 5, and the rail webs, and are provided with the usual head and nut members 20 and 21. An effective bolt insulation is provided for by utilizing the well known insulating expedients of the metal and insulating washers 22 and 23 at the inner sides of the head and nut members 20 and 21, and the insulating sleeves or bushings 24 arranged in the bolt holes of the side joint plates or members 6.

Another form of joint having the same mechanical and electrical functions as the one already described is shown in Fig. 5 of the drawings and suggests the idea of substituting for one of the strut bars 5 at one side of the rails, a wooden or equivalent filler block 25 provided at its top side with an inclined wedging face 26 upon which bears the inclined bearing face 19 of the head 15 arranged thereover, so that upon the tightening of the bolts the riding of the face 19 over the face 26 causes a wedging or forcing down of the filler block 25 upon the base flange of the rails. In this modification, the insulation between the joint shoe, at the filler side, and the base plate section of the opposite shoe may be provided for by interposing an insulating strip 27 between said elements and holding it in place between the filler block 25 and the rail base. In all other respects the construction shown in Fig. 5 is the same as shown in Fig. 1, and similar reference characters will apply to similar parts in the separate elements.

Another form of joint having the mechanical and insulating functions of the joints already described is shown in Figs. 6, 7, and 8 of the drawings. Referring to this construction it will be seen by reference to Fig. 6 that the opposite side joint shoes are each provided, in addition to the heads or head ribs 15, with a lower supplemental pressure rib 28 projecting inwardly therefrom in a plane below the head 15 and provided with an inclined bearing face 29 adapted to ride upon the inclined foot flange 30 of a side clamp element 31 in the form of a channel or angle bar. The channel or angle bar 31 at each side of the rails is designed to fit between the head and base flange of the rail in the manner common to the conventional types of angle bars, but in addition to the foot flange 30 thereof, each of the said side channel clamp bars 30 is provided at its upper edge with an inclined wedging flange 32 engaged by the under inclined bearing face 19 of the pressure head of the joint plate. The same design and arrangement of parts are duplicated at opposite sides of the rails (as shown in Fig. 6), and it will be observed that upon the tightening of the joint bolts each joint shoe exerts a wedging action upon the flanges 32 and 30 of each channel bar 31 with the result of crowding the same inward and downward, thereby pressing the rails down to the base plates

and holding both rails in unison against upward thrust. Also, in this form of the invention the upper edges of the channel bars 31 exert a firm upward pressure under the heads of the rails with the result of tending to correct downward thrust of the rail ends.

In insulating the joint shown in Fig. 6, side insulating sheets 33 are interposed between the side channel bars or clamp elements 31 and the rails, and each side insulating sheet 33 is provided with a bottom apron extension 34 projecting into the gap between one base plate section and the opposite joint shoe.

In further illustration of the wide range of applicability of the improvements claimed herein, another practical form of insulated rail joint embodying the same is shown in Fig. 9 of the drawings. The joint shown in this figure of the drawings involves an effective combination of the opposite joint shoes with channel bars 36 fitting within the sides of the rails, and wooden or equivalent filler blocks 37 interposed between the channel bars and the upright members of the shoes 3 and 4. Referring particularly to this construction, it will be observed that the channel bars 36 act in the capacity of the clamp elements herein referred to, and each of the same is provided at its upper and lower edges with the head and foot flanges 38 and 39 respectively, which are of duplicate design and are disposed at similar angles so as to make the bar reversible, and capable of being reversed from end to end to bring either of the flanges 38 and 39 uppermost, and at the same time cause a perfect registration of the channel bar at the side of the rails between the head and base flanges thereof.

As indicated, one of the distinctive features of the form of joint shown in Fig. 9 resides in interposing a wooden or equivalent filler block 37 between each channel bar 36 and the opposing upright member or girder 6 of one of the joint shoes, and said filler block 37 is preferably provided with double beveled upper and lower sides on each of which are formed the separate opposite bevels or beveled faces 40 and 41 which extend from the vertical center of the block to the flat side faces of the same. It will be noted that the bevels or beveled faces 40 at one side of the vertical center of each block 39 register with the corresponding faces or bevels of the head and foot flanges 38 and 39 of the opposing channel bar, while the uppermost outer bevel 41 of each filler block is engaged by the correspondingly inclined or beveled face 19 of the head 15 of the opposing shoe member or girder 6. Preferably, the bevels or beveled faces 40 and 41 of each filler block are of uniform extent and angularity and register interchangeably with the head and foot flanges of the channel bar and with the beveled face of the head of the upright member or girder of the shoe, consequently providing a filler block which is of uniform and duplicate formation along the top and bottom thereof and therefore reversible from end to end and vertically, that is capable of being reversed from side to side, from top to bottom, and from end to end. Though this is a preferable and practical construction, the same may be obviously modified without affecting the essential features of the invention claimed herein.

It will be observed that in the construction described the filler block and channel bar arrangement, in connection with the upright members or girders of

the shoes, provide means whereby, upon the drawing together of the joint members by the tightening of the bolts, the channel bars will be crowded with a firm pressure beneath the heads of the rails and over the base flanges thereof with the result of effectually bracing the rails against upward or downward thrust. Also, the construction described provides a most effective and thorough insulation of the joint by reason of the employment of the wooden filler blocks 37 which supplement the insulating functions of the side insulating sheets 33 interposed between the channel bars or clamp elements 36 and the sides of the rails. The side insulating sheets 33 are of the same form and preserve precisely the same functions as the corresponding and similarly numbered elements shown in Fig. 6 of the drawings.

In all forms of the invention the insulation between the ends of the rails is provided for by the usual insulating end post 35 interposed between such ends.

Other modifications will readily suggest themselves to those familiar with the art, and it is thought that the construction and many advantages of the herein described improvements will be apparent without further description.

I claim:

1. In an insulated rail joint, the rails, and side joint plates each carrying a base section affording a support for one rail end only and provided with a reinforcing flange, and insulating means. 90
2. In an insulated rail joint, the rails, and side joint plates each carrying a base plate section provided with a reinforced inner end edge, and insulation between the rail ends. 95
3. In an insulated rail joint, the rails, and side joint plates each carrying a base plate section provided at its inner end with a diagonal reinforcing flange, and insulation between the rail ends. 100
4. In an insulated rail joint, the rails, and side joint plates each carrying a base plate section provided at its inner end with a diagonal triangular reinforcing flange, and insulation between the rail ends. 105
5. In an insulated rail joint, the rails, and side joint plates each carrying a base plate section affording a support for one rail end and having a diagonally arranged inner end crossing the joint between the rail ends, and insulation between the rail ends. 110
6. In an insulated rail joint, the rails, and side joint plates each carrying a base plate section affording a support for one rail end and having a diagonally arranged reinforced end edge crossing the plane of the joint between the rail ends, and insulation between the rail ends. 115
7. In an insulated rail joint, the rails, and side joint plates each carrying a base plate section for one rail end and each having a clearance portion for the rail supported by the other base plate section, and insulation between the rail ends. 120
8. In an insulated rail joint, the rails, and side joint plates, each of said plates carrying a base section for one rail end and having a diagonal flanged inner end crossing the plane of the joint between the ends of the rails, and each base section also having a clearance portion for the rail end supported by the other base section, and insulation between the rail ends. 125
9. In an insulated rail joint, the rails, side joint plates each carrying a base plate section provided with a bent down corner forming a reinforcing girder, and insulation between the rail ends. 130
10. In an insulated rail joint, the rails, and side joint plates each carrying a base plate section provided at its inner end portion with a bent down corner forming a pendent diagonal reinforcing girder, and insulation between the rail ends. 135
11. In an insulated rail joint, the rails, side joint plates each carrying a base plate section for one rail end, and

insulation interposed between the separate base plate sections and held upon one section by the rail end supported on the other section.

12. In an insulated rail joint, the rails, side joint plates each carrying a base plate section for one rail end, and insulation interposed between the inner ends of the separate base plate sections and having a holding member held upon one section by the rail end supported on the other section.
13. In an insulated rail joint, the rails, and side joint plates each carrying a base plate section for one rail end and provided with a clearance depression underlying the rail end supported on the other base plate section, and an insulating web interposed between the base plate sections and held in said clearance depression.

14. In an insulated rail joint, the rails, opposite complementary joint shoes each carrying an individual base plate for one rail end, and clamp elements interposed

between the joint shoes and the rails and cooperating therewith to provide means for forcing the rails downward when the joint parts are drawn together, and insulation between the rail ends.

15. In an insulated rail joint, the rails, opposite complementary joint shoes each carrying an individual base plate section for one rail end, each joint shoe having a head at the top of its upright member, and clamp elements interposed between the heads of the shoes and the rail bases and cooperating therewith to exert a downward thrust upon the rails when the joint parts are drawn together, and insulation between the rail ends.

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

BENJAMIN WOLHAUPTER.

Witnesses:

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E. A. VAN DEUSEN.