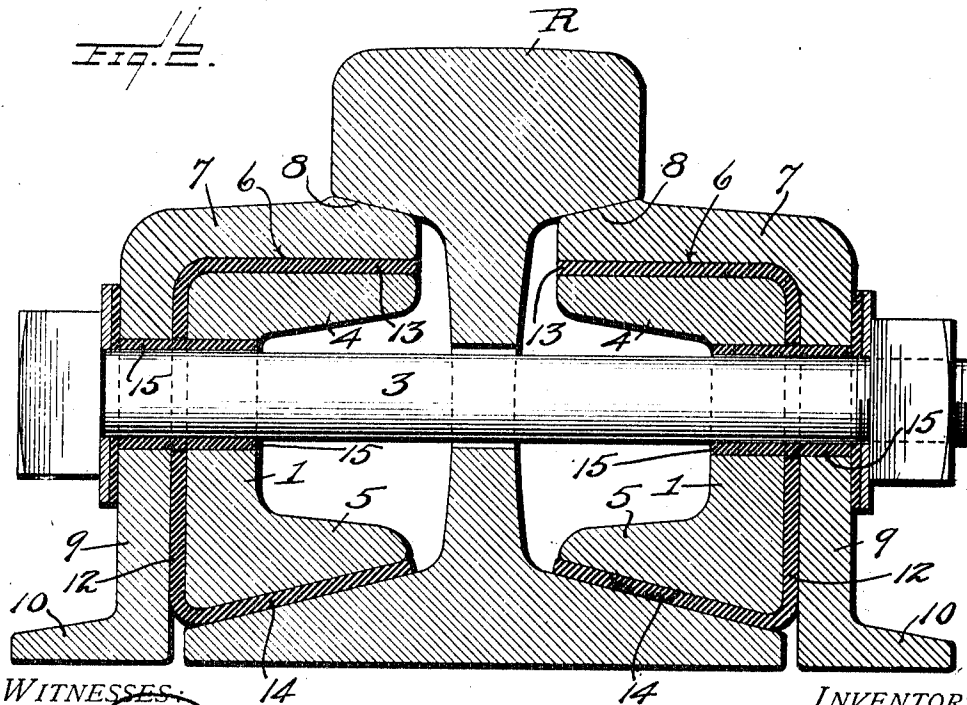
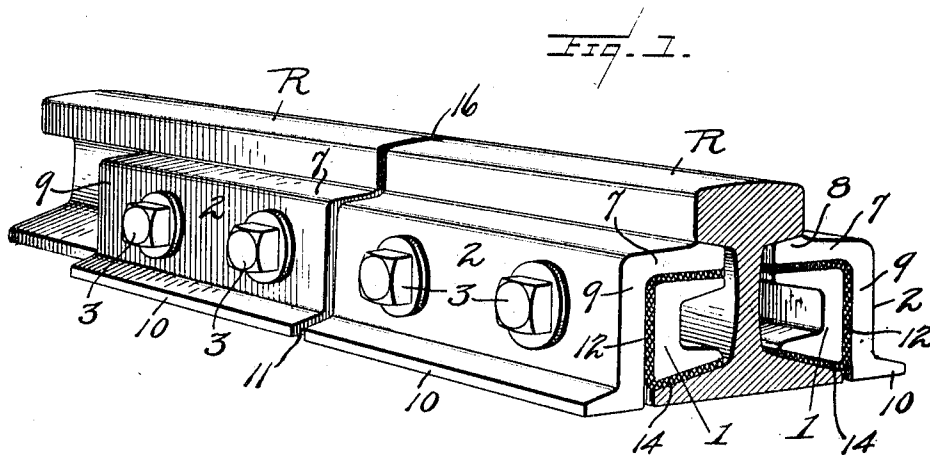


W. S. OGILVY & R. W. SMITH.
INSULATED RAIL JOINT.
APPLICATION FILED FEB. 23, 1909.

988,653.

Patented Apr. 4, 1911.
3 SHEETS-SHEET 1.



WITNESSES:

Wm. F. Roy & Co.
Emory L. Groff

BY

S. F. Holmhauser
their Attorney

INVENTORS

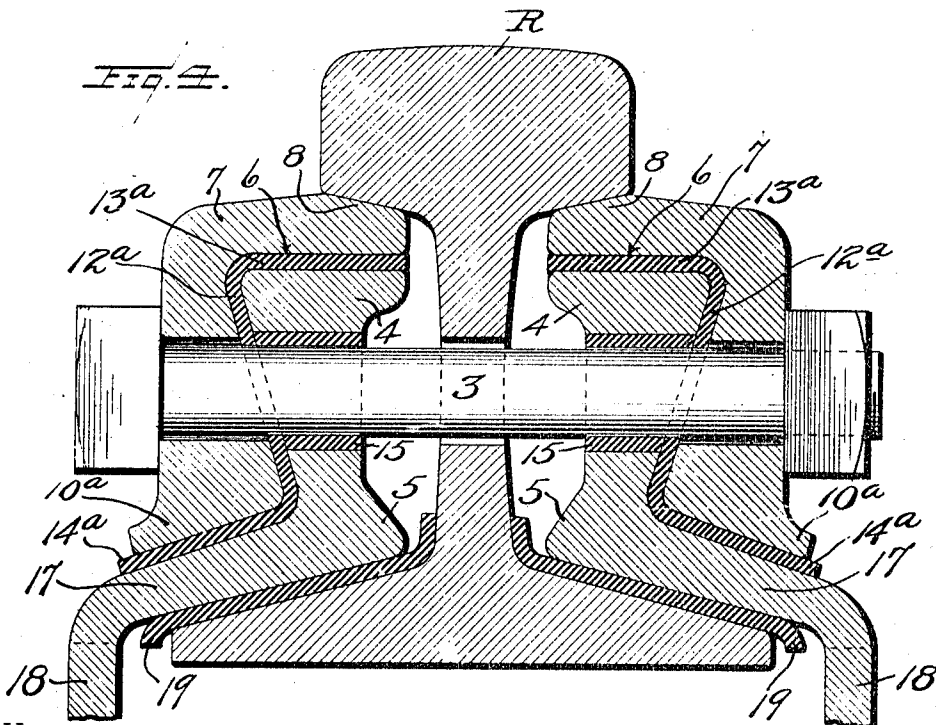
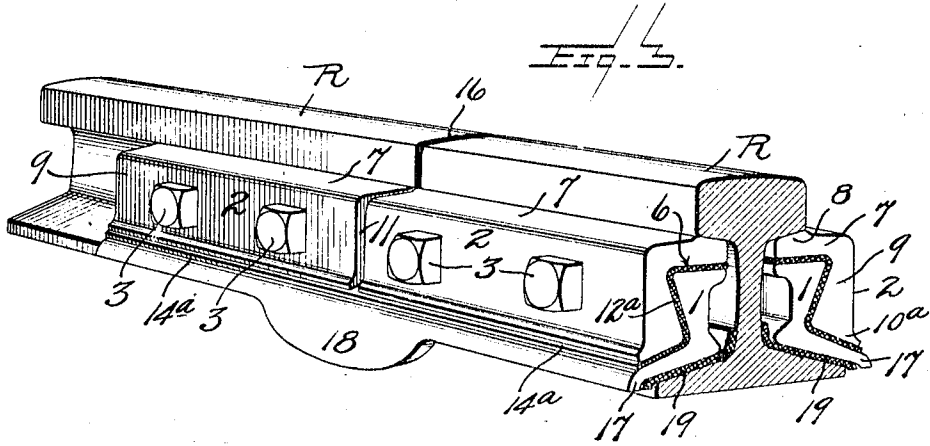
Walter S. Ogilvy
Reuben W. Smith.

W. S. OGILVY & R. W. SMITH.
INSULATED RAIL JOINT.
APPLICATION FILED FEB. 23, 1909.

988,653.

Patented Apr. 4, 1911.

3 SHEETS-SHEET 2.



WITNESSES:

W. F. Roy & Co.
Emory L. Groff.

BY

INVENTORS
Walter S. Ogilvy and
Reuben W. Smith.

S. P. Wolchaster
their Attorney

W. S. OGILVY & R. W. SMITH.
INSULATED RAIL JOINT.
APPLICATION FILED FEB. 23, 1909.

988,653.

Patented Apr. 4, 1911.

3 SHEETS—SHEET 3.

Fig. 5

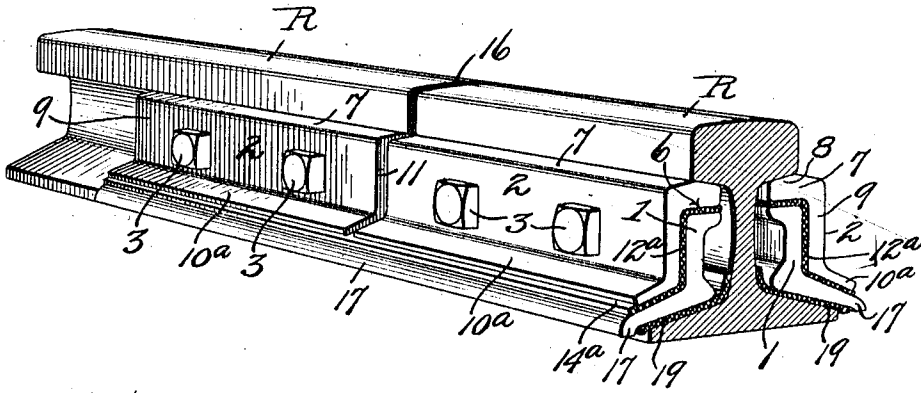
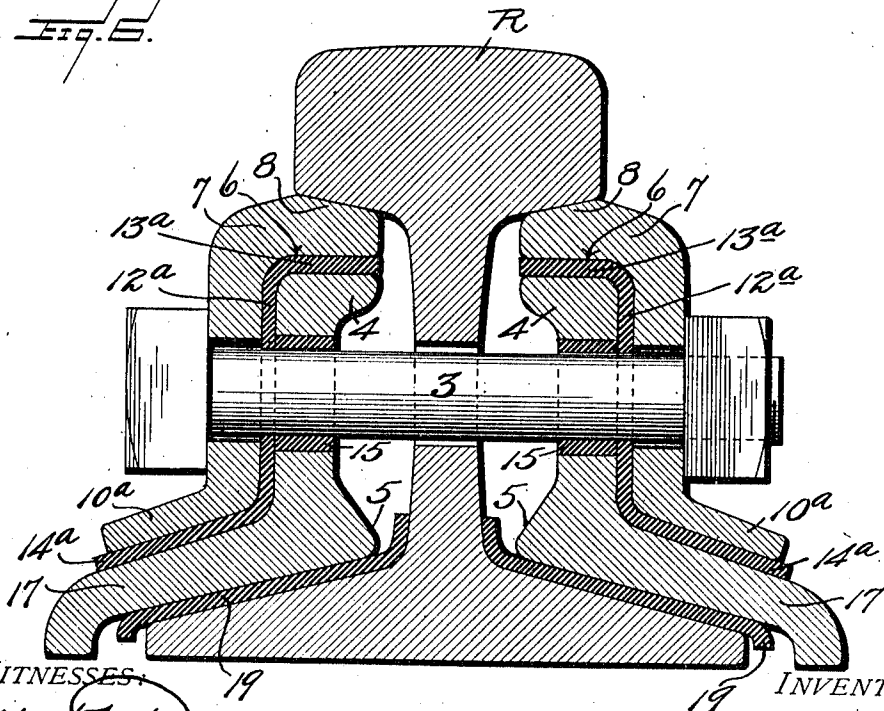


Fig. 6



WITNESSES:

Wm. F. Roy Co.
Emory L. Croff.

BY

W. H. Chaupier,
their Attorney.

INVENTORS

Walter S. Ogilvy,
Reuben W. Smith.

UNITED STATES PATENT OFFICE.

WALTER S. OGILVY, OF NEW YORK, N. Y., AND REUBEN W. SMITH, OF MARIETTA, PENNSYLVANIA, ASSIGNORS TO THE RAIL JOINT COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

INSULATED RAIL-JOINT.

988,653.

Specification of Letters Patent.

Patented Apr. 4, 1911.

Application filed February 23, 1909. Serial No. 479,442.

To all whom it may concern:

Be it known that we, WALTER S. OGILVY, a subject of the King of Great Britain, residing at New York city, in the county of New York and State of New York, and REUBEN W. SMITH, a citizen of the United States, residing at Marietta, in the county of Lancaster and State of Pennsylvania, have 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, and has special reference to certain novel and practical improvements therein designed to provide a metallic bearing support at the under sides of the rail heads, and also to maintain an effective insulation throughout the joint.

To this end the invention contemplates an insulated rail joint wherein no insulation is interposed directly between the heads of the rails and the metallic bars underlying the rail heads, thereby allowing the heads of the rails to take a direct metallic bearing on the joint bars, and permitting of the provision of such bearing or bearings for the insulating material as to more effectually safeguard the same from cutting out under the pressure of the load imposed on the rails by the passing trains.

A further and general object of the invention is to provide an insulated rail joint wherein the various elements thereof are so arranged and combined as to secure a maximum strength and reinforcement throughout from a mechanical standpoint, and also a thoroughly complete insulation of the joint, while at the same time presenting a structure which may be readily set up and taken apart and which permits of convenient and ready insulation renewals.

In connection with the feature of providing a direct metallic contact between the under sides of the rail heads and the joint bars underlying the heads, a distinctive feature of the invention resides in definitely providing a construction in which the bearing area for the insulating material is increased to a greater extent than the area of the contact between the under sides of the rail heads and the joint bars. Hence, it is proposed by the present invention to provide a novel construction, combination, and arrangement of parts serving to in-

crease, in a practical manner, the bearing area for the insulating material, and to decrease the fiber strain, thus enabling the material to better withstand the load imposed.

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 invention is susceptible to a wide range of structural modification without departing from the scope thereof, but a few preferred embodiments of the invention, exemplifying the same, are shown in the accompanying drawings, in which:

Figure 1 is a sectional perspective view of a rail joint constructed in accordance with the present invention. Fig. 2 is a vertical transverse sectional view of the design of joint illustrated in Fig. 1, the line of section including one of the joint bolts. Fig. 3 is a sectional perspective view of a modified design of joint embodying the present invention. Fig. 4 is a vertical cross sectional view of the design of joint shown in Fig. 3, the line of section including one of the joint bolts. Fig. 5 is a sectional perspective view of a still further modification of the invention showing other practical designs for the continuous splice bars and the discontinuous bearing bars. Fig. 6 is a vertical transverse sectional view of the design of joint shown in Fig. 5, the line of section including one of the joint bolts.

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

A rail joint constructed in accordance with the present invention is characterized by the employment of inner continuous splice bars at the sides of the rails, outer discontinuous bearing bars arranged outside of the splice bars and interposed between the latter and the under sides of the rail heads, and suitable insulation between the splice bars and the rails, and between the splice bars and the said outer bearing bars; the said outer bearing bars being arranged to overhang the continuous splice bars and having bearing faces for the insulation whose area is greater than the area of the under sides of the rail heads, thus providing

an increased bearing for the insulation with a consequent reduction of the fiber strain. This general combination and arrangement of parts is susceptible to embodiment in various forms of construction, and is well exemplified by the design of joint shown in Figs. 1 and 2 of the drawings and to which particular reference will now be made. The insulated rail joint shown in said Figs. 1 and 2 of the drawings embodies in its organization the service rails R, R, inner continuous splice bars 1, 1, the outer discontinuous bearing bars 2, 2, and the usual series of joint bolts 3. The oppositely arranged inner continuous splice bars 1 extend the full length of the joint between the two rails, and occupy positions within the fishing spaces of the rails but do not have a direct bearing engagement with the under sides of the rail heads. In fact, according to the plan of construction proposed by the present invention, the inner continuous splice bars 1 are of a less height vertically than the distance between the under sides of the rail heads, and the upper faces of the rail flanges, but when assembled in operative relation to the bearing bars 2 provide a substantial and secure splice connection between the two rails of the joint. In the embodiment of the invention suggested in Figs. 1 and 2 of the drawings, the said continuous splice bars 1 are in the form of channel bars with their channeled sides turned inward facing the webs of the rails, and by reason of their channeled formation, each continuous splice bar 1, as shown in the said figures of the drawings, is provided at the top edge of its upright or body member with an intumed substantially horizontal top bearing flange 4, and at the lower edge of its upright or body member with an intumed inclined bottom bearing flange 5 overlying the upper inclined face of the rail flange. Irrespective of the general cross sectional design of the individual splice bars 1, a distinctive feature of the present invention resides in providing each of said bars with a top bearing flange 4 presenting a top surface whose area is greater than the area of the under side of the rail head and which lies beneath and opposes a corresponding under bearing face 6 formed at the under side of the intumed overhanging top flange 7 of each of the discontinuous bearing bars 2. It will therefore be observed that the under bearing faces 6 at the tops of the bearing bars 2 are of greater area than the area of the inclined bearing heads 8 formed at the inner upper corners of the bearing bars and having a direct metallic contact with the under sides of the rail heads.

In the form of construction above described, each of the outer discontinuous bearing bars 2 is constructed with an upright girder member 9 arranged over and

outside of the inner continuous splice bar 1. This upright girder member 9 is not only provided at the top edge thereof with the intumed overhanging top flange 7 having the elements 6 and 8, but is also provided at its lower edge with an integral outturned strengthening flange or foot 10 which contributes materially to the general reinforcement of the bar.

With respect to the outer discontinuous bearing bars 2, it will be noted that the same are not co-extensive with the inner splice bars, and therefore do not extend the full length of the joint, as each rail end has associated therewith a pair of the bearing bars 2 arranged respectively upon opposite sides thereof and terminating short of the joint between the meeting ends of the rails, thus leaving an insulating gap 11 between the adjoining bearing bars at the same side of the rails, which gap is sufficiently wide to perform an insulating function, though the same may be supplied with insulating material should it be so desired.

To provide for the insulation of the joint structure shown in Figs. 1 and 2 of the drawings, side insulating sheets 12, of suitable insulating material, are interposed between each continuous splice bar 1 and the pair of adjacent bearing bars 2 overlying the same, said side insulating sheets 12 having upper flange portions 13 lying between the top bearing flange 4 of the splice bar and the under faces 6 of the top flanges 7 of the bearing bars 2, and a corresponding lower flange portion 14 lying between the bottom bearing flange 5 of the splice bar and the upper side of the rail flange, all of which is plainly shown in the drawings. A proper bolt insulation may be accomplished through the employment of any of the well known bolt insulating expedients, such for instance as insulating bushings or sleeves 15 lining the bolt holes in the splice bars and bearing bars, and the usual insulating washers arranged between the outer faces and the backing washers at the inner sides of the heads and nuts of the bolts. The insulation between the bolt elements and the bearing bars 2 is preferably employed to safeguard and insure a thorough insulation of the joint, though this part of the insulation may be omitted if considered practical or desirable. To complete the insulation of the joint described, the usual insulating end post 16 is interposed between the contiguous rail ends. In connection with the insulation of the joint, it is to be further observed that by reason of the discontinuity of the outer bearing bars 2, that is, the employment of bearing bars for each rail, terminating short of the joint between the meeting ends of the rails, the joint can be effectively insulated by having a one end insulation only therefor, that is, having the

insulating material applied to the parts directly associated with one of the rails instead of being continued throughout the length of the joint. This, however, is a matter of detail that may or may not be resorted to without departing from the spirit of the invention.

Another practical embodiment of the invention is illustrated in Fig. 3 of the drawings, the difference over the joint already described being mainly one of design in the cross sectional form of the splice bars and bearing bars with a consequent change in the form and disposition of the insulation between said bars. Referring particularly to this modification, it will be observed that while the inner continuous splice bars 1 are partly of a channeled formation and embody the same mechanical elements as previously described, yet at the same time the said splice bars of the modified structure, shown in Figs. 3 and 4, are of an angle bar formation in that the same are each additionally provided with an outstanding inclined foot flange 17 overlying the rail flange, said inclined foot flange extending the full length of the bar 1 and preferably provided at the center of the joint with a centrally located pendent strengthening girder 18 which gives substantial reinforcement to the bar and hence to the joint at the center of the latter. This girder effect at the center of the joint is of practical importance, as will be recognized by those familiar with the art.

In the arrangement of the insulation for the modified design of joint shown in Figs. 3 and 4 of the drawings, the side insulating sheets 12^a are provided at their upper edges with the turned upper flange portions 13^a corresponding in position and function to the insulating flange portions 13 previously referred to, but at their lower edges the side insulating sheets 12^a in the modification are provided with outturned lower flange portions 14^a which are interposed between the upper sides of the outstanding foot flanges 17 of the splice bars and the bottom flanges 10^a of the discontinuous bearing bars 2. In this connection, it is to be noted that the bottom flanges 10^a of the bearing bars 2 are disposed within the vertical plane of the flanges at the base of the rails, and, hence, lie within the outer angle of the inner continuous splice bars. A further detail in the insulating of the modified joint structure shown in Figs. 3 and 4 of the drawings resides in interposing bottom insulating sheets 19 between the lower sides of the foot flanges 17 of the splice bars 1 and the upper sides of the rail flanges.

In order to exemplify the wide range of structural modification that may be resorted to in carrying out the invention, there is shown in Figs. 5 and 6 of the drawings a

construction embodying all of the mechanical and insulating features of the joint shown in Figs. 3 and 4 of the drawings, but illustrating the splice bars and discontinuous bearing bars as being of approximately plane angle bar formation in cross section, thereby permitting of a compact construction involving a minimum projection of the rail joint parts beyond the sides of the rail heads, while at the same time preserving a strong and substantial joint structure having complete insulating functions. Also, the modification shown in Figs. 5 and 6 of the drawings suggests the use of angle bar splices without the centrally located girder 18 hereinbefore referred to.

Other modifications will 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.

We claim:

1. An insulated rail-joint comprising, in combination with the rails, inner continuous splice-bars extending the full length of the joint, a pair of outer disconnected bearing bars extending substantially half the length of the joint and interposed between each splice bar and the under sides of the rail heads, said splice bars and bearing bars having faces exposed to the insulating material of a greater area than the area of the under sides of the rail heads, and insulating material interposed between the splice bars and the bearing bars.

2. An insulated rail-joint comprising, in combination with the rails, inner continuous splice-bars overlying the rail flanges and extending the full length of the joint, a pair of outer disconnected bearing bars interposed between each splice bar and the under sides of the rail heads and having a direct metallic contact with the latter, each bearing bar extending substantially one-half the length of the joint, the said splice-bars and the bearing bars furthermore having faces exposed to the insulating material of a greater area than the area of the under sides of the rail-heads, and insulating material between the splice-bars and the bearing bars.

3. In an insulated rail-joint, the combination with the rails, of inner continuous splice-bars extending the full length of the joint and arranged over the rail flanges, outer disconnected bearing bars arranged at the outer sides of the splice bars and provided with intumed top flanges lying horizontally above the tops of the splice bars and arranged in direct contact with the under sides of the rail heads, said top flanges having bearing faces exposed to the insulating material of a greater area than the area

of the under sides of the rail-heads, and each of said bearing bars extending substantially one-half the length of the joint, and insulating material interposed between the splice-bars and the bearing bars, and also
5 between the splice-bars and the rails.

4. An insulated rail joint comprising, in combination with the rails, inner continuous splice-bars arranged in the fishing spaces in
10 spaced relation to the rail webs and extending the full length of the joint, each splice bar having at its center a depending strengthening girder, a pair of outer disconnected bearing bars extending substan-
15 tially half the length of the joint and inter-

posed between each splice bar and the under sides of the rail heads, insulating material interposed between the splice bars and the bearing bars, and insulating material interposed between the splice bars and
20 the rails.

In testimony whereof we hereunto affix our signatures in the presence of two witnesses.

WALTER S. OGILVY.
REUBEN W. SMITH.

Witnesses:

BENJA. WOLHAUPT,
K. McNALLY.