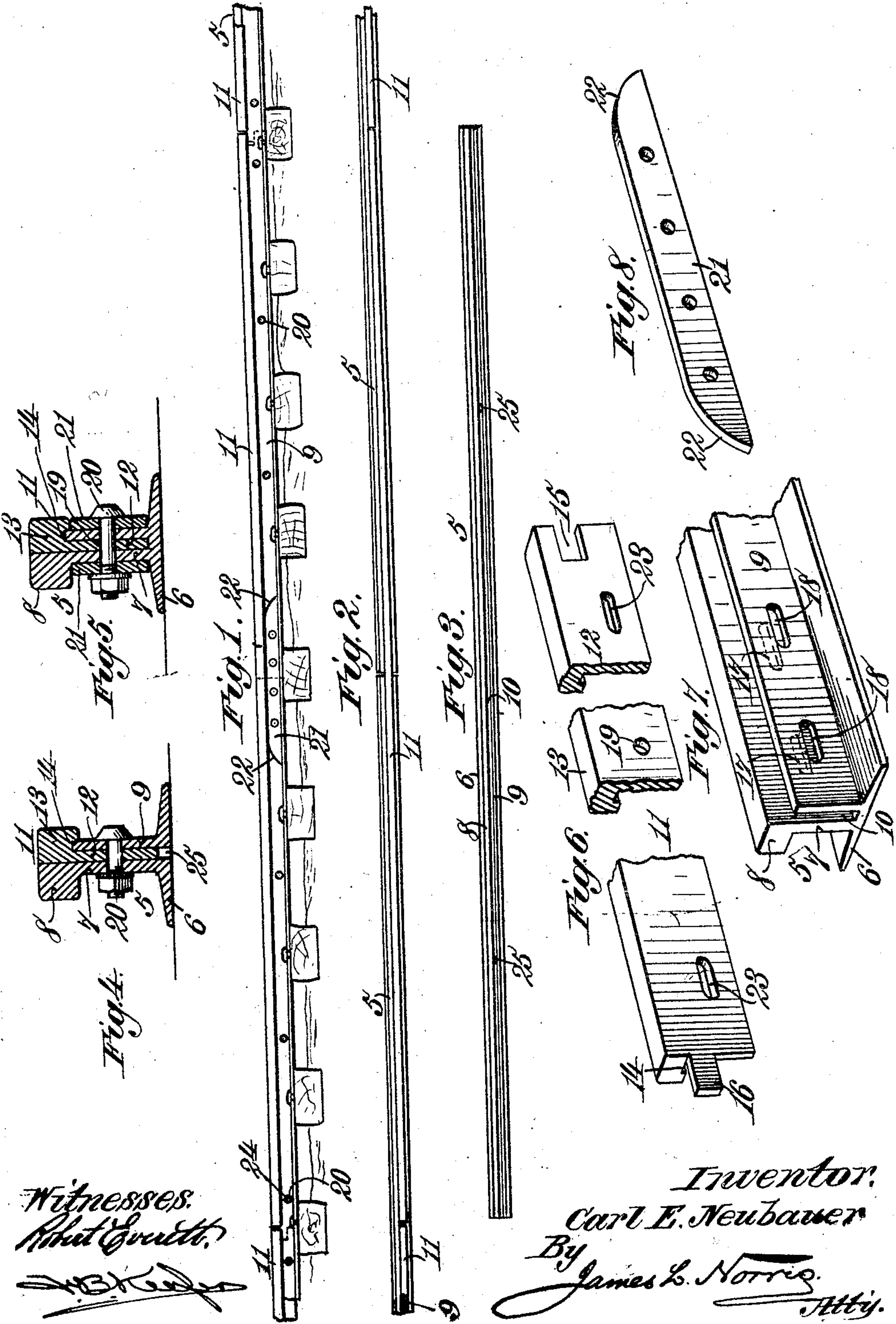


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RAILROAD RAIL.

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934,338.



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## UNITED STATES PATENT OFFICE.

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## RAILROAD-RAIL.

934,338.

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To all whom it may concern:

Be it known that I, CARL E. NEUBAUER, a subject of the Emperor of Germany, and who has declared his intention of becoming a citizen of the United States, residing at Hibbing, in the county of St. Louis and State of Minnesota, have invented new and useful Improvements in Railroad-Rails, of which the following is a specification.

This invention relates to a railroad rail, and the primary object of the same is to provide a break joint organization to prevent pounding of the wheels of the rolling stock on the ends of the rails at the joints of the latter and also to eliminate the noise or click incident to wheels passing over the ordinary rail joints with material advantages in durability and wear of the rails and of the wheels of the rolling stock.

A further object of the invention is to provide a rail construction which will prevent sliding of the rails particularly on a down grade and to fasten the contiguous ends of the rail lengths or sections in such manner that the bolts will be relieved of strain or shearing effect and the rails will have a more stable assemblage with relation to the road-bed.

The improved rail will materially reduce the expense of labor as there are no low joints to tamp and in view of the durability of the rail organization the cost of repair or replacement of worn rails is also materially reduced.

With these and other objects and advantages in view, the invention consists in the construction and arrangement of the several parts which will be more fully hereinafter specified.

In the drawing:—Figure 1 is a side elevation of a rail organization embodying the features of the invention. Fig. 2 is a top plan view of the same. Fig. 3 is a view similar to Fig. 2 with a portion of the organization removed. Fig. 4 is a transverse vertical section on an enlarged scale of the rail organization at a point distant from the joint formed between the rail lengths or sections. Fig. 5 is a view similar to Fig. 4 taken through the rail sections at the joint. Fig. 6 is a detail perspective view of an auxiliary rail broken through and forming a part of the invention. Fig. 7 is a detail perspective view of a portion of the main rail. Fig. 8 is a detail perspective view of the form of

fish plate employed in connection with the main joints.

Each main rail 5 is formed as shown in detail by Fig. 7 and embodies a base flange 6 from which rises a web 7 having an upper half-head 8. Parallel with the web 7 and rising from the base flange 6 is a guard flange 9 slightly greater in vertical extent than the web 7 and forming with the latter a longitudinal seat 10. The flange 9 extends throughout the full length of the outer portion of each main rail section 5 and terminates in alinement with the ends of each main rail section. Removably fitted in the longitudinal seat or channel 10 is an auxiliary rail section 11, shown in detail in Fig. 6, and consisting of a vertical web 12 having an upper inwardly overhanging half-head 13 to cooperate with the head 8 and form a complete head of the usual rail head dimensions, the underside of the half-head 13 being formed with a longitudinal groove 14 close to the web 12 to receive the upper end of the guard flange 9, as clearly shown by Figs. 4 and 5. The one end of each auxiliary rail section 11 has a longitudinal slot 15 opening outwardly therethrough and the opposite end is formed with a projecting tongue 16, the tongues of the several auxiliary rail sections fitting in the slots 15 of the adjacent sections so as to prevent any tendency to depression or rising of the auxiliary rail sections with relation to the main rail sections 5 with which they cooperate. The main and auxiliary rail sections are so arranged as to break joint, or the joints of the auxiliary rail sections are at points intermediate the joints of the main rail sections, an unbroken portion of the auxiliary rail sections extending across the outer side of the joints between the main rail sections. The joints as specified between the auxiliary rail sections 11 also provide a firm interlock of the said sections, and in the main rail sections 5 and the guard flanges 9, elongated bolt openings 17 and 18 are respectively formed, as shown in dotted and full lines in Fig. 7. The auxiliary rail sections 11 at the points where they cross the joints between the main rail sections and guard flanges are formed with round bolt openings 19 that coincide with the elongated bolt openings 17 and 18 to receive bolts and nuts 20 of usual form, the said bolts and nuts also passing through fish plates 21, one at the outer side of each joint



and resting against the guard flanges 9 of the contiguous main rail sections. Each fish plate 21 has its ends tapered or the upper corner portions removed by cutting the same on a downwardly curved incline as at 22 so as to effectively carry the spring of the rail over the opposite extremities thereof very easily and reduce any tendency to breakage of the rails by removing obstructive resistance means at the ends of the fish plate. The webs 12 adjacent to the joints of the auxiliary rail sections 11 are also formed with elongated bolt openings 23, as shown by Fig. 6, to coincide with round bolt openings 24 in the flanges 9 of the main rail sections 5, bolts 20 being also inserted through the openings 23 and 24 as shown by Fig. 4. The arrangement of the bolts and openings as just explained compensates for expansion and contraction of the main and auxiliary rail sections and the movement of the auxiliary rail sections during expansion or contraction does not effect a complete separation of the ends of said auxiliary rail sections in view of the fact that the tongues 16 are long enough to remain in engagement with the slots 15 under maximum separating conditions.

The guard flanges 9 and the web 12 respectively tightly engage the groove 14 and the bottom of the longitudinal seat or channel 10 and set up a tight assemblage of the auxiliary rail sections, and this arrangement together with the slot and tongue interlock at the ends of the auxiliary rail sections will operate to maintain the latter sections in firm association with the main rail sections; and though it is obvious that in time some wear will ensue, such wear will be reduced to a minimum and in the event of excessive wear the auxiliary rail sections may be removed and replaced by corresponding new sections with less expense than is required in replacing a whole rail section and as now commonly adopted, and the necessity of sending rails back to rolling mills for restoration is avoided. Furthermore, the rail sections may be repaired without interfering in the least with traffic over the road, as the main rail sections may remain intact and provide a sufficient support for the rolling stock when the auxiliary rail sections are removed for the purpose of replacement or repair.

Though the webs 12 of the auxiliary rail sections are fully housed within the longitudinal seats or channels 10 and moisture to a large extent will be prevented from entering the seats or channels, there will be, of course, some moisture present, and to reduce injury to the rail organization the moisture is permitted to escape or flow out through openings 25 extending through the base flanges 6 at intervals and serving as outlets for the seats or channels 10, and also

providing means for the liberation of any dirt that may collect in the seats or channels.

The improved rail organization as specified will be found advantageous in many other particulars when practically used, and spreading or shifting of the rails in irregular directions is avoided. It will be seen that when the wheels of the rolling stock pass over the joints there is no break, but a continuation is provided by the auxiliary rail sections and hence the wheels of the rolling stock always run over a continuous surface, and pounding as well as the usual clicking noise is prevented.

What is claimed is:

1. In a rail organization of the class specified, the combination of rail sections having outer longitudinal seats extending downwardly to the base flanges of the sections and also provided with inwardly extending half heads, auxiliary rail sections having webs fitted in said seats and outwardly projecting half heads to register with the half heads of the first named sections, the auxiliary rail sections crossing the joints of the first named sections, and means for securing all of the sections in assembled relation.
2. In a rail organization of the class specified, the combination of main rail sections having outer channels extending downwardly to the base flanges of the sections and half-heads, auxiliary rail sections having half-heads and webs fitted in the said channels and extending across the joints of the main sections, and means for fastening the associated sections.
3. In a rail organization of the class specified, the combination of main rail sections having half-heads and outer longitudinal channels extending downwardly to the base flanges of the sections and formed by upwardly projecting guard flanges rising from said base flanges, auxiliary rail sections having half-heads with under grooves to receive the upper edges of the guard flanges and depending webs to fit in the channels, the auxiliary rail sections extending across the joints of the main sections, and means for fastening the associated rail sections.
4. In a rail organization of the class specified, the combination of main rail sections having half-heads and outer longitudinal channels formed by upwardly projecting guard flanges, auxiliary rail sections having half-heads with under grooves to receive the upper edges of the guard flanges and depending webs to fit in the channels, the auxiliary rail sections extending across the joints of the main sections, and fastening means securing the associated sections including fish plates each of which has the opposite extremities sloped downwardly and at curved inclines, and bolts extending through the fish plates and the sections.
5. In a rail organization of the class speci-



5   fied, the combination of main rail sections  
having outer channels, auxiliary rail sections  
extending across the joints of the main rail  
sections and provided with terminal slots  
and tongues, and fastening means for hold-  
ing the rail sections in associated relation.

In testimony whereof I have hereunto set

my hand in presence of two subscribing wit-  
nesses.

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Witnesses:

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