R. B. DAVIS.

RENEWABLE HEAD RAILWAY RAIL.

APPLICATION FILED MAY 23, 1908.

923,150. **Patented June 1, 1909.**

Fig. 1.

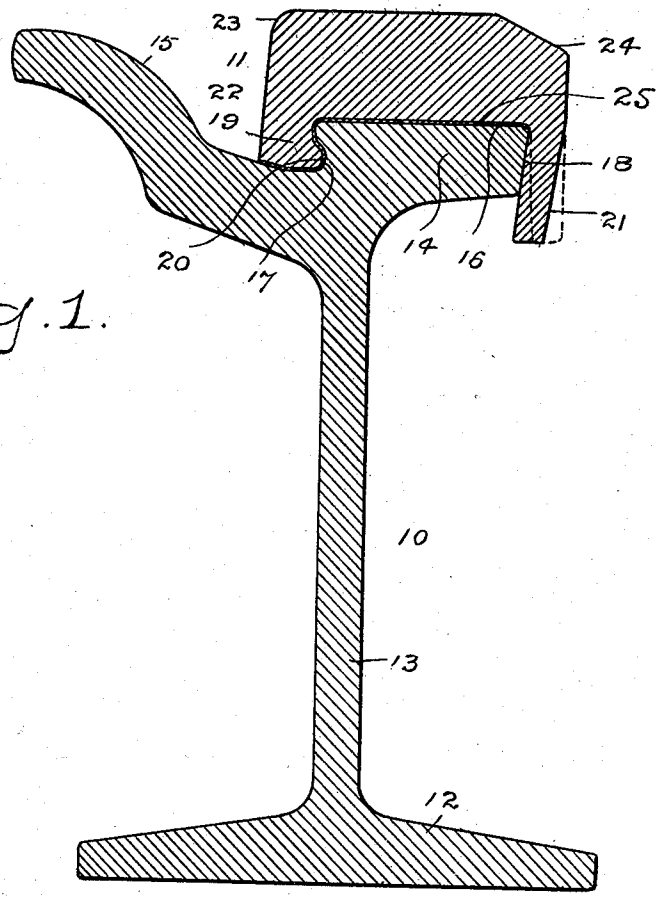
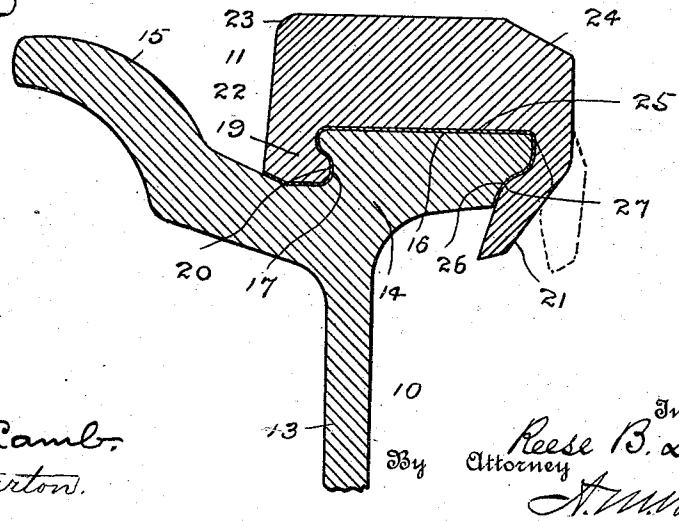


Fig. 2.



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UNITED STATES PATENT OFFICE.

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RENEWABLE-HEAD RAILWAY-RAIL.

No. 923,150. Specification of Letters Patent. Patented June 1, 1909.

Application filed May 23, 1908. Serial No. 434,518.

To all whom it may concern:

Be it known that I, REESE B. DAVIS, a citizen of the United States, residing at Hartford, county of Hartford, State of Connecticut, have invented a new and useful Renewable-Head Railway-Rail, of which the following is a specification.

This invention has for its object to provide a renewable head street railway rail which shall be relatively inexpensive to produce and very much more durable than any rail heretofore used, for the reason that three-fourths, more or less, of the weight of the rail is placed in the lower or girder section thus making this section practically permanent, as the wear is all upon the head or upper section.

A vitally important feature of my present invention is, that I place a strip of soft metal between the sections, the function of which is to prevent oxidation of the sections and to prevent frictional wear of the two sections which would otherwise be caused by the rolling action of car wheels in passing over the rails.

Another important feature of the invention is, that the two sections of the rail are united in such a manner that the upper section may be removed, when renewal becomes necessary, without interfering with the pavement on the inner side of the rail.

In other words the object of the invention is to greatly reduce the cost of maintenance of street railway systems and without appreciable increase in the initial cost of laying. This I accomplish by making the lower or girder section of the rail relatively heavy so that it will be practically permanent, cushioning the upper or renewable section upon soft metal, thereby preventing oxidation and frictional wear and greatly prolonging the period of wear of the upper section and by so uniting the sections that when renewal of the head becomes necessary it may be effected by removing the pavement on one side of the rail only, thereby greatly decreasing the cost of renewal.

With these and other objects in view I have devised the novel two part renewable rail of which the following description in connection with the accompanying drawing is a specification, reference characters being used to indicate the several parts.

Figures 1 and 2 are cross sections of my novel rail illustrating slightly variant forms of the invention, the configuration of the clencher lip before assembling being indicated by dotted lines.

10 denotes the lower or girder section of my novel rail and 11 the head or upper section thereof.

In practice I place approximately three-fourths of the weight of metal in the lower section and approximately one-fourth of the weight of metal in the upper section, for example seventy-two per cent. of the weight in the lower section and twenty-eight per cent. in the upper section. The lower section comprises a base 12, a web 13 and a top 14. The top comprises a flange 15 and a table 16. The special configuration of the flange is of course not of the essence of the invention.

In the present instance I have shown the top contour of the flange as a convex curve running into a downwardly oblique line extending to the base of the table which is raised above the lower portion of the flange. The top of the table is approximately flat. The side toward the flange is provided with an undercut groove 17 shown as rounded and the opposite or outer side of the table comprises a downward and inward incline indicated by 18. The head rests upon the table and is provided on its inner side with a downwardly extending lug 19 having on its inner face a rib 20 corresponding in configuration with groove 17. Upon the outer side of the head is a downwardly extending clencher lip 21 which before attachment lies in substantially the position indicated by dotted lines and when the head is attached, as I shall presently describe, lies in close engagement with incline 18, as shown in full lines. Between the inner side of the head and the flange is a groove 22 which receives the flanges of car wheels. The inner edge of the head is shown as rounded as at 23 and the outer edge is beveled downward as at 24 which reduces the weight of the head by removing superfluous metal and meets the line of the top of the pavement.

25 denotes a cushion strip which is laid between the table and the head. This cushion strip is simply a strip of soft metal or alloy, as a strip of lead or an alloy of lead, and lies between the wearing portions of the sections. The outer edge of the strip may lie at the outer edge of the table as in Fig. 1 or may be extended downward as in Fig. 2, between the clencher lip and the outer side of the table.

The only difference between the two forms illustrated is that the cushion strip is made

wider in the form illustrated in Fig. 2 and lies between the clencher lip and the outer edge of the table, and in the form illustrated in Fig. 2 the outer side of the table is provided with a groove 26 and the clencher lip is provided with a rib 27 which may either lie in the groove itself or may force the cushion strip into said groove as shown.

In use the rails of the lower section are laid in the ordinary way and then brought up to true surface and line, the rails of the upper section or head being placed alongside with the joints alternating. The ends of the head rails may be beveled transversely so that the ends lap past each other thus making practically a continuous rail. The top of the lower section is then cleaned in any suitable manner, as by means of wire brushes. Then the cushion strip 25 of soft metal or alloy is laid along the top of the lower section covering the portions subjected to wear. Then the rails of the head are placed in position thereon with rib 20 forcing the cushion strip into engagement with the groove 17 in the inner side of the table. The clencher lip is then bent to place in any suitable manner as for example, by heating said clencher lip by means of an acetylene brazing torch, the intense heat of which softens the metal of the clencher lip sufficiently to permit it to be pressed to place in engagement with incline 18 as shown in full lines in the drawing by means of a suitable tool, not shown. The function of this tool is to apply pressure to both sides of the table so that simultaneously with the bending of the clencher lip against the incline lug 19 will be drawn tightly against the inner side of the table and rib 20 will force the cushion strip tightly into groove 17 so that the head is tightly locked to the lower section and the cushion strip is clamped between the sections, the power applied being either mechanical, hydraulic or pneumatic pressure. The cushion strip acts to prevent oxidation between the head and the lower section and prevents frictional wear of the two sections caused by the rolling of car wheels over the head. The wear is entirely upon the head, the lower section lasting for an almost indefinite length of time.

When renewal of the head becomes necessary it is only required to remove the pavement on the outer side of the rail leaving the pavement on the inner side undisturbed. Having removed the pavement an acetylene brazing torch or any suitable means of heating the clencher lip is applied and then the clencher lip is bent outward by means of a suitable tool and the head turned over inward disengaging rib 20 from groove 17 and permitting the removal of the old head and a new one to be placed in position in the manner already described or in any suitable manner either with or without a new cushion strip.

It will be observed that the clencher lip 21 extends well below the inclined side 18 of the table or top of the lower section of the rail, there being no lateral projection from the said table or top which will, or would be liable to, interfere with the seating or forcing down of the head or upper section 11. If there were any lateral projections on which the lower end of the clencher lip rests, said lip would have to be made with exceeding accuracy in order that there should be no interference with the proper seating of the head. Moreover this downward extension of the clencher lip enables it to be bent firmly against the incline by the bending tools or dies employed, regardless of whether the lip varies more or less in length.

Having thus described my invention I claim:

1. A rail of the character described comprising a lower section having a flange and a table with a groove on its inner side and an incline on its outer side, a head having a downwardly extending lug and a rib to engage the groove, a clencher lip extending below the inclined side of the table to engage the incline and lock the head to the lower section and a cushion strip of soft metal lying between the head and the lower section.

2. A rail of the character described comprising a lower section having a flange and a table with a groove on its inner side and an incline on its outer side, a head having a lug with a rib to engage the groove and a clencher lip extending below the inclined side of the table to engage the incline and a cushion strip of soft metal interposed between the wearing portions of the lower section and the head.

3. A rail of the character described comprising a lower section having a flange and a table with a groove on its inner side and an incline on its outer side, a head having a lug with a rib to engage the groove and a clencher lip extending below the inclined side of the table to engage the incline and a cushion strip of soft metal interposed between the base of the flange and top and sides of the table and the head.

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

REESE B. DAVIS.

Witnesses:

ROBERT H. BOND,

WILLIAM C. SMITH.