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RAILWAY RAIL MOUNTING MEANS

Filed Dec. 3, 1959

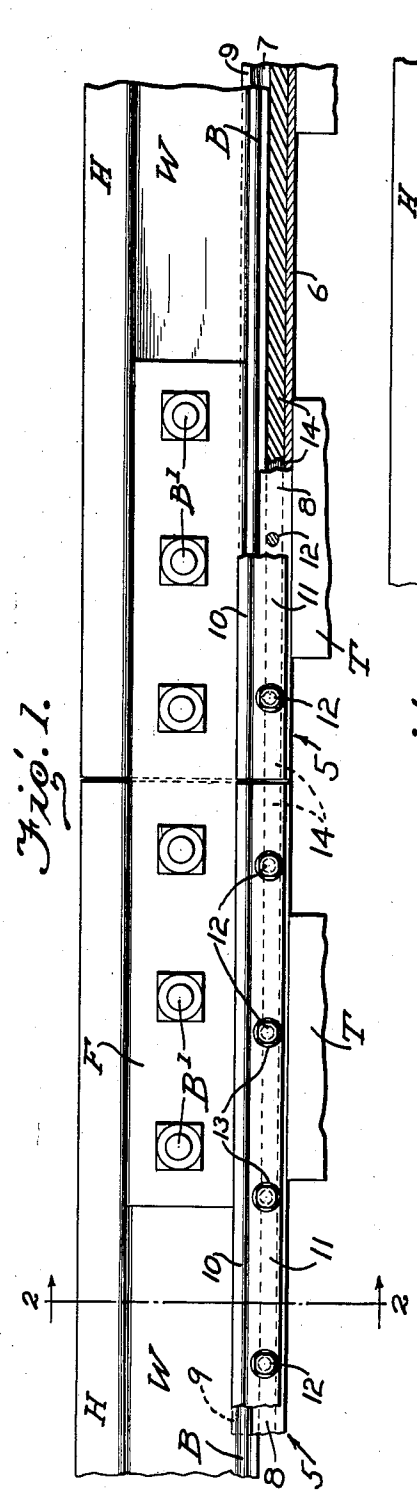


Fig. 1.

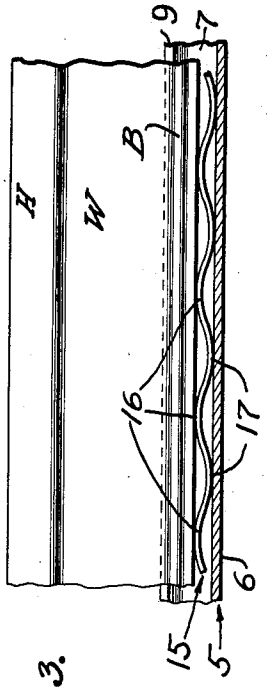


Fig. 3.

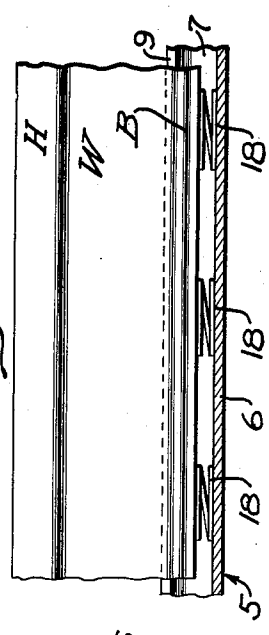


Fig. 4.

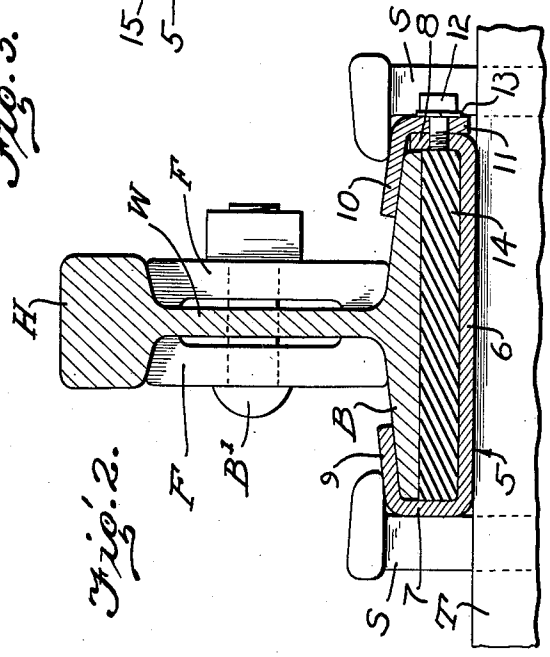


Fig. 2.

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RAILWAY RAIL MOUNTING MEANS

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7 Claims. (Cl. 238—284)

The present invention relates broadly to the field of transportation, and in its specific phases to an improved form of railway track.

Railway car wheels have long been made of a suitable metal, normally cast and then machined while fixed in place on an axle, and with such axle being carried on heavy springs connected variously to the railway car itself. In time the wheels wear flat in spots and pound on the track at each revolution, and this in turn, has led to increasing the rail weight per foot of track, and has necessitated machining the wheels at intervals to remove the flat spots. This difficulty has been long recognized along with solid anchoring of the track to the railway ties, accentuating the pounding action, and while special railway ties, and even wheels with rubber inserts have been proposed, same has not proved commercially satisfactory. It was a recognition of this problem and the lack of any commercially satisfactory solution to same, which led to the conception and development of the present invention.

Accordingly, among the objects of the present invention is the provision of a novel construction for mounting conventional railway rails and resiliently supporting them, thereby more yieldably supporting the rolling stock for more comfortable travel, decreasing noise, absorbing some of the shock from flat wheels and thereby preventing them from becoming rapidly worse and injuring the rails, and consequently lengthening the time such wheels may be used without reshaping their treads.

In carrying out the above end, further objects are to provide a novel construction well adapted for securing, with conventional spikes, regulation railway track upon the customary railway ties; to provide a novel construction which will not interfere with the use of conventional fish plates and bolts in securing the ends of adjacent rails together; and to provide a novel construction which will not seriously interfere with removal of a damaged rail and installation of another.

Another object is to provide one form of construction in which the rail is supported directly upon a suitable flat strip of rubber, synthetic rubber or other resilient material to attain the desired resilient cushioned support.

Still another object is to provide a second form of the invention in which the rail is supported directly upon a serpentine spring having crests contacting with the rail base and depressions contacting with a base plate underlying the rail.

Yet another object is to provide a third form of the invention in which the rail is supported by closely spaced short stiff coiled springs.

A still further object is to provide a novel construction which may be manufactured and installed at reasonable cost and yet will be effective and durable.

Still further objects and advantages of the invention will appear as the description proceeds.

To the accomplishment of the foregoing and related ends, the invention, then, consists of the means hereinafter fully described and particularly pointed out in the claims, the annexed drawing and the following description setting forth in detail certain means for carrying out the invention, such disclosed means illustrating, however, but several of various ways in which the principle of the invention may be used.

In the annexed drawing:

FIGURE 1 is a side elevation, partly in section, showing the connected ends of two rails mounted in accordance

with the present invention and resting on ties, before spiking to the latter, showing the form of construction in which each rail is supported directly on a resilient strip.

FIGURE 2 is an enlarged transverse section as taken on line 2—2 of FIGURE 1, looking in the direction of the arrows, and including the usual spikes.

FIGURE 3 is a fragmentary elevation partly in section showing the form of construction in which a serpentine spring resiliently supports the rail.

FIGURE 4 is a similar view showing the form of construction in which the rail is supported by stiff and heavy coiled springs adapted to carry the load required of railway track.

The constructions shown in the drawings will be rather specifically described, but attention is invited to the possibility of making variations within the obvious spirit and scope of the invention herein set forth.

The rails resiliently mounted by means of the invention are conventional, and each rail comprises a base B, a central web W integrally joined to said base, and a head H integrally joined to the opposite edge of said web, from that joined to said base B. The adjacent ends of two rails are shown in FIGURE 1, connected by conventional fish plates F and bolts B^1, with the edges of said fish plates abutting the head H and base B, respectively. Conventional railway ties are shown at T and spikes at S, FIGURE 2.

A metal channel 5 depressably receives each rail base B and is preferably continuous across rail joints although, if desired, it may be coextensive in length with said rails, and the showing is intended to diagrammatically illustrate both forms of construction. This channel 5 includes a base plate 6 having vertical longitudinal flanges 7 and 8 formed integrally with its edges and disposed in abutting relation with the edges of the rail base B. A substantially horizontal longitudinal flange 9 is integral with the upper edge of the vertical flange 7, and projects inwardly therefrom and is disposed upon one longitudinal edge portion of the rail base B. A second substantially horizontal flange 10 projects inwardly over the vertical flange 8 and is disposed upon the other longitudinal edge portion of the rail base B. The flange 10 is detachably mounted, and in the present disclosure, has an attaching flange 11 secured against the vertical flange 8 by means of cap screws 12. Each screw 12 preferably has a suitable lock washer 13, or the equivalent, for holding screw 12 against accidental unscrewing. Both of the horizontal flanges 9 and 10 are so spaced from the web W, at least at their end portions, that they interfere in no way with conventional use of the fish plates F and bolts B^1. The flange 10 with its attaching flange 11 is preferably of a length such that it is coextensive with the length of the rail base B of each rail to facilitate removal at any time a section of rail needs replacing for any reason.

In FIGURES 1 and 2, the rail is resiliently supported by a flat strip 14 of suitably tough and firm (but not hard) rubber, synthetic rubber or other suitable resilient material, preferably of a thickness in the range of one half inch to one inch. This strip 14 is interposed between the rail base B and the base plate 6 of the metal channel 5 and, if desired, may be coextensive in length and width with either said base plate 6 or said flange 10 with its attaching flange 11, the latter facilitating replacement of strip 14 when a piece of track is removed.

In FIGURE 3, a heavy serpentine metal spring 15 takes the place of the resilient strip 14. This spring 15 has alternate crests 16 and depressions 17 which contact respectively with the rail base B and the base plate 6. The width of the spring 15, in preferred construction, closely corresponds to that of the base B and the inner face of base plate 6.

In FIGURE 4 stiff, short, coiled springs 18 are em-

ployed between the rail base B and the base plate **6** to resiliently support the rail mounted thereon, and may be held in place in any conventional manner.

The height of any of the resilient supports **14**, **15** or **18** is slight compared with the height of the rail itself, and the flanges **9** and **10** may therefore be rather close to the base plate **6**. Thus, lateral stability of the rail is not seriously impaired and conventional spikes S may be employed, as seen in FIGURE 2, without projecting so far above the ties T as to be liable to bending under lateral stresses exerted on the rail by the rolling stock.

The detachable flange **10** not only aids in assembly, but permits easy removal of a damaged rail and substitution of another if required.

In all forms of the invention, the rail is so resiliently supported as to increase the comfort of travel by providing for more yieldably supporting the rolling stock and decreasing noise. Also, shocks ordinarily delivered to the rails by flat wheels are so cushioned that rail injury is substantially reduced or prevented. Therefore, lighter weight rails may be employed with corresponding saving in cost per running foot of track. Also, it is not necessary to reshape flat wheels as frequently, due to reduction of the pounding effect of the flat spot, and maintenance cost is thus decreased.

Drainage holes (not shown) may be provided, if desired. However, whenever the resilient rail supporting means is such that it will not be injured by grease, the channel **5** may contain sufficient grease to exclude any objectionable quantity of water as well as provide for smooth operation of the track in the metal channel while held in place by detachable flange **10**.

From the foregoing it will be seen that novel and advantageous provision has been made for attaining the desired ends. However, attention is again invited to the possibility of making variations within the obvious spirit and scope of the invention as shown, described, and set forth in the claims.

Other modes of applying the principle of my invention may be employed instead of those explained, change being made as regards the apparatus herein disclosed, provided the means stated by any of the following claims or the equivalent of such stated means be employed.

I therefore particularly point out and distinctly claim as my invention:

1. For use with railway track structure having a series of longitudinally aligned rails, each said rail having a horizontal base, a central vertical web integral with said base and a head integral with the top of said web, said track structure also having a plurality of ties extending transverse to said rails and spaced apart longitudinally along said rails, means for mounting the rails on the ties comprising: an elongated, continuous metal channel substantially longitudinally coextensive with each of said rails and adapted to be disposed between said rail base and said ties and bridging a plurality of said ties, said channel having a base plate, vertical longitudinal flanges substantially abutting both of the longitudinal edges of said rail base and also having substantially horizontal longitudinal flanges projecting inwardly of said vertical flanges and overlying the longitudinal edge portions of said rail base, fastening means releasably joining at least one of said horizontal flanges to its corresponding vertical flange of said metal channel; resilient means disvertical flange of said metal channel; resilient means disposed between said base plate and the lower surface of said rail base and urging said rail base upward so that the longitudinal edge portions thereof normally snugly engage said horizontal flanges.

2. Railway track structure, comprising: a series of longitudinally aligned conventional rails, each said rail having a horizontal base with a smooth lower surface, a central vertical web integral with said base and a head integral with the top of said web; a plurality of conventional wooden ties extending transverse to said rails and spaced apart longitudinally along said rails; conventional fish plates overlapping and secured to the webs of said rails at the adjacent ends thereof and securing said rails to each other; an elongated, continuous metal channel substantially longitudinally coextensive with each of said rails and disposed between the latter and said ties and bridging a plurality of said ties, each said channel having a base plate, vertical longitudinal flanges substantially abutting both of the longitudinal edges of said rail base and also having substantially horizontal longitudinal flanges projecting inwardly of said vertical flanges and overlying the longitudinal edge portions of said rail base, fastening means releasably joining at least one of said horizontal flanges to its corresponding vertical flange of said metal channel; resilient means disposed between said base plate and said lower surface of said rail base and urging said rail base upwardly so that the longitudinal edge portions thereof normally snugly engage said horizontal flanges; and spike means secured to said ties and extending over and snugly engaging said horizontal flanges to secure said channel and thereby said rails to said ties.

3. Railway track structure according to claim 2, wherein one of said horizontal flanges is integral with one of said vertical flanges and the other one of said horizontal flanges is one leg of a substantially L-shaped member, the other leg of which is parallel with and adjacent the other one of said vertical flanges; said spike means overlying and snugly engaging said one leg so that said L-shaped member will be held in position thereby even if said fastening means should break.

4. A structure as specified in claim 2, in which said vertical flanges are integral with said base plate, and one of said horizontal flanges is integral with one of said vertical flanges.

5. A structure as specified in claim 2, in which said resilient rail supporting means is an elongated flat strip of resilient cushioning material substantially coextensive in width with said rail base.

6. A structure as specified in claim 2, in which said resilient rail supporting means is an elongated metal spring extending longitudinally of the rail and having alternate crests and depressions integrally joined to each other, said crests being in contact with the rail base, and said depressions being in contact with said base plate.

7. A structure as specified in claim 2, in which said resilient rail supporting means is constituted by a multiplicity of relatively closely spaced, short, stiff, coiled compression springs.

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UNITED STATES PATENT OFFICE

CERTIFICATE OF CORRECTION

Patent No. 3,104,059 September 17, 1963

Percy Gordon

It is hereby certified that error appears in the above numbered patent requiring correction and that the said Letters Patent should read as corrected below.

Column 3, lines 64 and 65, strike out "disvertical flange of said metal channel; resilient means"; line 67, for "upward" read -- upwardly --.

Signed and sealed this 21st day of April 1964.

(SEAL)
Attest:
ERNEST W. SWIDER

Attesting Officer

EDWARD J. BRENNER

Commissioner of Patents