July 21, 1931. K. VOSSLOH 1,815,815

RAIL FASTENING DEVICE

Filed Aug. 1, 1930

Fig. 1.

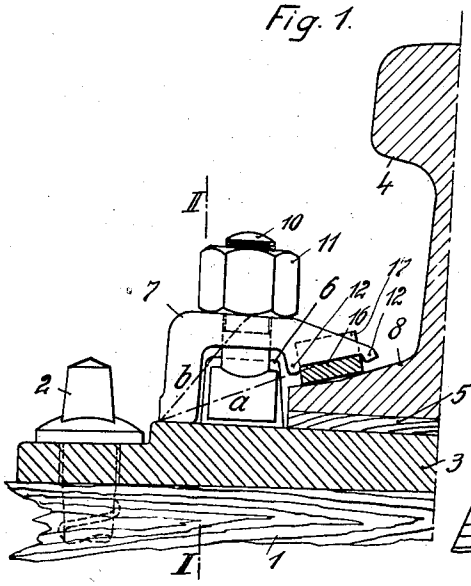


Fig. 2.

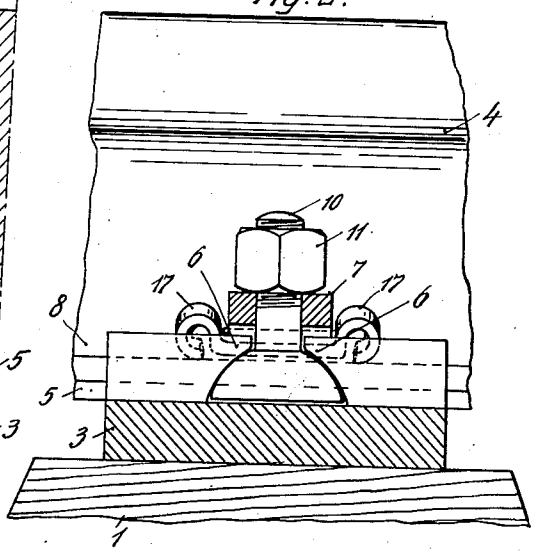


Fig. 3.

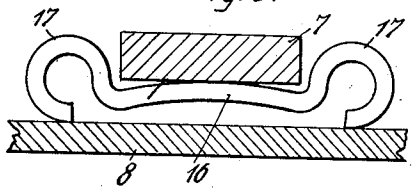


Fig. 4.

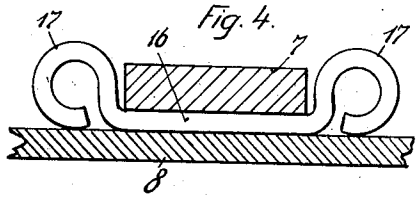


Fig. 5.

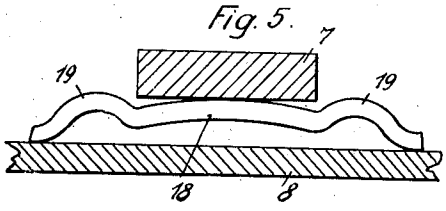


Fig. 6.

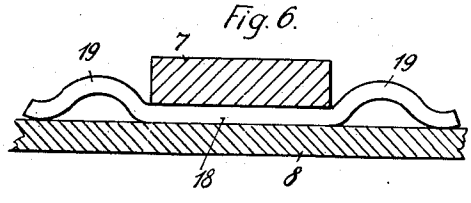


Fig. 7.

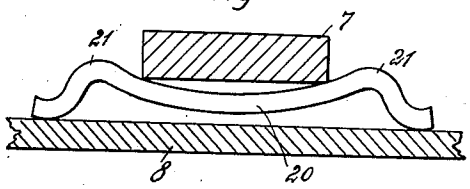


Fig. 8.

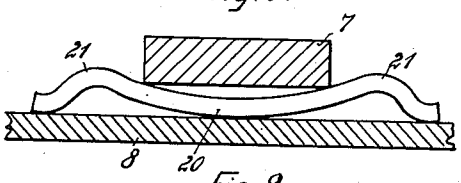
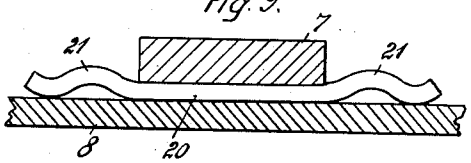


Fig. 9.



Inventor:
Karl Vossloh
by Richard E. Babcock
Attorney

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1,815,815

UNITED STATES PATENT OFFICE

KARL VOSSLOH, OF WERDOHL, GERMANY

RAIL FASTENING DEVICE

Application filed August 1, 1930, Serial No. 472,427, and in Germany July 7, 1928.

Patent applications have been filed in the following foreign States:

Germany, Serial V. 24,109/19, filed July 7, 1928, (not yet granted); Rumania, Serial No. 18,602, filed June 23, 1930; France, Serial No. 297,770, filed June 26, 1930; Belgium, Serial No. 292,108, filed June 24, 1930; Czechoslovakia, Serial No. P. 4977/30, filed June 24, 1930; Hungary, Serial No. 11,410, filed June 27, 1930; Great Britain, Serial No. 20,168/30, filed July 3, 1930; Poland, Serial No. P. 31,373, filed June 30, 1930; Union of Socialist Soviet Republics, Serial No. 72,502, filed June 28, 1930; Netherlands, Serial No. 52,323, filed June 26, 1930; Spain, Serial No. 118,760, filed June 27, 1930; Italy, filed June 30, 1930; Austria, filed June 20, 1930.

The invention relates to rail fastening devices and more particularly to a resilient tensioning arrangement for rail fastening devices.

Rails are usually secured by fastening the base of the rail on to the base plate screwed on to the sleepers, by means of clamping plates. The clamping plates thereby rest on screw pins and one end is forced against the base plate and the other against the base of the rail by means of female screws. In order to prevent the screws from becoming loose, resilient tensioning means are provided either between the clamping plate and the female screw or between the clamping plate and the base of the rail.

In the present invention a new construction of resilient tensioning means is arranged between the base of the rail and the clamping plates securing the rails. The spring, according to the invention, is characterized in that its ends project under the clamping plate in the direction of the rails, and the projecting ends are provided with a suitable bend. The tensioning means can for example be so constructed according to the invention that it consists of a spring rod, the part of which lying under the clamping plate is bent to form a relatively flat bend whilst the ends of the spring rod projecting on both sides of the clamping plate in the direction of the rail have more pronounced bends which are directed either opposite to or in the same direction as the bend of the part of the spring lying under the clamping plate.

The bends at the projecting ends of the spring give an additional spring force to the tensioning means and considerably increase the tensioning force so that it is guaranteed that the parts effecting the securing of the rails still have a great tension and are held together securely even after the wearing of the bearing surfaces as a result of being in use for some years.

The tensioning means of the present invention is especially suitable for a railway superstructure in which a wooden intermediate layer which is considerably compressed is arranged in known manner between the rail and its supporting plate. Whilst otherwise the rail easily becomes loose through the wearing of the wooden intermediate layer and the securing means which enables the material to be strained as if by knocking as a result of the alternate loading and unloading of the rail by the wheel pressure, the tensioning means of the present invention guarantees a permanently high tensioning force which is not even slackened in any noteworthy degree with the increased wear of the securing parts because the path of the spring in the tensioning means is fairly long.

One form of construction of the invention consists in that the clamping plate is provided on its lower side with one or two bars which form stops for the longitudinal sides of the spring, for the purpose of making the securing device proof against becoming loose if the tensioning means happens to be broken.

The invention is more particularly de-

scribed with reference to the accompanying drawings in which:—

Figure 1 is a cross-section through a rail securing device and with the tensioning means of the present invention mounted in position.

Figure 2 is a side view of the rail securing device shown in Fig. 1 on the line II—II.

Figures 3 and 4 are diagrammatical illustrations of the tensioning means shown in Figs. 1 and 2 when in unloaded and tensioned condition respectively.

Figures 5 and 6 are side elevations of a modified form of construction of the resilient tensioning means also in unloaded and tensioned position respectively.

Figures 7, 8 and 9 are side elevations of a spring rod when unloaded, half tensioned, and completely tensioned, respectively and wherein the bends of the spring ends projecting over the clamping plate are in the opposite direction to the bend of the part of the spring lying under the clamping plate.

A base plate 3 is secured to a wooden sleeper 1 by means of screws 2 bolts or the like. With the intermediate insertion of a wooden plate 5 a base portion 8 of the rail 4 rests on the base plate 3. The rail is secured in position in known manner with the aid of clamping plates 7 which abut on one side against the base plate 3 and on the other side against the base 8 of the rail through the intermediary of a resilient tensioning means 16. The clamping plate 7 is adjustable by means of a tightening nut 11 which rotates about the axis of a screw pin 10 the head of which is disposed between rib-shaped stops 6 on the base plate 3.

The resilient tensioning means arranged between the clamping plate 7 and the base 8 of the rail consists in the construction shown by way of example in Figs. 1 to 4 of a spring rod 16 the centre part of which lying under the clamping plate is bent substantially flat whilst the spring ends projecting over the clamping plate have bends and are constructed as rolled annular springs 17.

As is shown in Fig. 1 radii *a* and *b* respectively illustrate the distance between the point of engagement of the resilient tensioning means 16 with the clamping plate 7 and the forward edge of the latter and the distance between such edge and the point of engagement of the nut 11 on the screw bolt 10. As the former is considerably longer than the latter a considerable pressure is applied to maintain the nut 11 in position on the screw bolt 10 to guarantee against loosening of the screw.

In the construction shown by way of example in Figs. 5 and 6 a spring rod 18 serving as a tensioning means has three adjacent bends in the same direction of which two 19 have a more pronounced bend at the ends of the spring than the middle part of the spring rod lying under the clamping plate.

In the form of construction shown by way of example in Figs. 7 to 9 the bends 21 of the projecting spring ends are in the opposite direction to that of the relatively flatter bend 20 of the part of the spring lying under the clamping plate 7. This construction has the advantage that even after attaining the half tensioned position shown in Fig. 8 between the bearing point of the spring on the clamping plate 7 and the base 8 of the rails four different spring arms are effective which offer a very great tensioning resistance to the perfect tightening of the clamping plate (Fig. 9).

The clamping plate 7 is provided on its lower side turned towards the base of the rail with two bars 12 running in the direction of the rails which when in the tensioned position project in close proximity to the base 8 of the rail, so that even when the tensioning means 16 is broken the rail is not considerably loosened as the bars 12 act as stops for the longitudinal sides of the spring and prevent the tensioning means from springing out laterally.

The invention is of course not limited to the forms of construction of the resilient tensioning means and the form of clamping plate shown but can be applied to many other uses while maintaining the same inventive thought.

What I claim is:

1. A rail fastening device comprising in combination a base plate supported by the tie, a clip fastened to the said base plate by means of a screw and resting upon a spring interposed between the free end of the clip and the base flange of the rail, said spring being provided outward of the clip with prolongations bent to form additional springs.

2. A rail fastening device comprising in combination a base plate supported by the tie a clip fastened to the said base plate by means of a screw and resting upon a spring interposed between the free end of the clip and the base flange of the rail, said spring being provided outward of the clip with prolongations bent in the same direction as the middle part of the spring and forming additional springs.

3. A rail fastening device comprising in combination a base plate supported by the tie a clip fastened to the said base plate by means of a screw and resting upon a spring interposed between the free end of the clip and the base flange of the rail, said spring being provided outward of the clip with prolongations bent in the opposite direction to the middle part of the spring and forming additional springs.

4. A rail fastening device comprising in combination a base plate supported by the tie, a clip fastened to the said base plate by

means of a screw and provided at its inner end with a shoulder or shoulders extending crosswise of the clip and a spring fitting between the shoulders of the clip and resting on the top face of the base flange of the rail, said spring being provided outward of the clip with prolongations bent to form additional springs.

In testimony whereof, I have signed my name to this specification at Stuttgart, Germany, this 21st day of July, 1930.

KARL VOSSLOH.