Oct. 17, 1961 P. PANDE-ROLFSEN 3,004,716

RAILWAY RAIL SECURING MEANS

Filed July 23, 1957

FIG. 1.

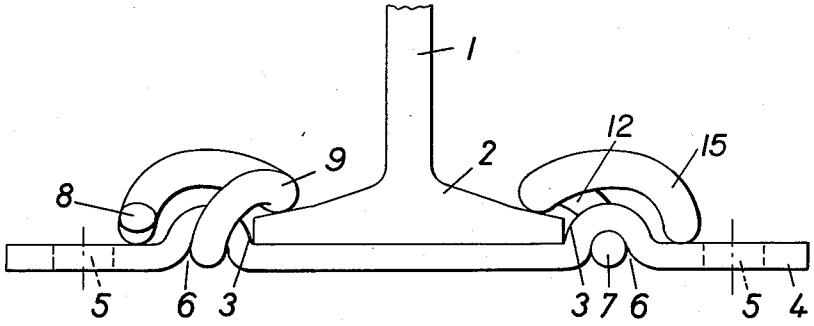


FIG. 2.

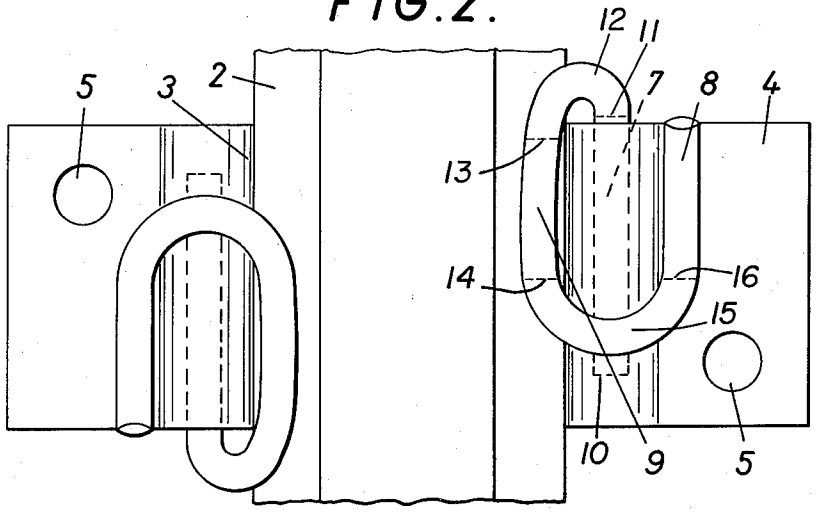
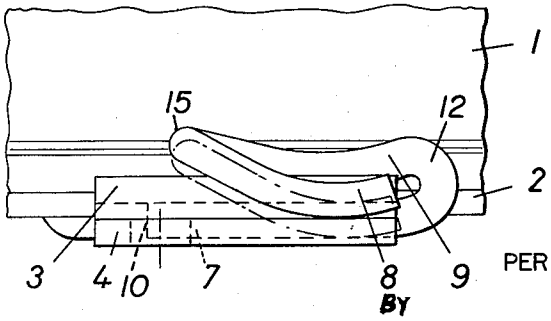


FIG. 3.



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United States Patent Office 3,004,716
Patented Oct. 17, 1961

3,004,716

RAILWAY RAIL SECURING MEANS

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Filed July 23, 1957, Ser. No. 673,645
Claims priority, application Norway Aug. 3, 1956
7 Claims. (Cl. 238—349)

This invention relates to fastening members for anchoring a railway rail and to rail-fastening arrangements employing such members.

According to one aspect of the invention, there is provided a fastening member for anchoring a railway rail, comprising a length of resilient metal of rod form which has a thickness of at least 1 centimetre and which is bent so as to have, progressing from one end of the length of metal to the other, a first portion which constitutes a substantially straight leg, then a second portion in the form of a reverse bend, then a third portion extending generally in the direction of said one end, then a fourth portion which extends from the third portion, generally to that side thereof upon which said leg is disposed, and constitutes a reverse-bend having a radius of curvature much larger than that of the second portion, and finally a fifth portion extending in the general direction towards the junction between the first and second portions.

According to another aspect of the invention there is provided, in combination, a railway rail, a flange at the base of the rail, a fixed anchorage member disposed adjacent the rail, portions of said anchorage member defining a passage which extends alongside the rail, parallel to the length of the rail, and is closed at the top and open at least at one end, a fixed, unyielding surface which, as seen from the rail, is disposed outward of said passage, and a fastening member, according to the last foregoing paragraph, having the first portion thereof inserted in said one end of the passage and the third and fifth portions bearing one upon the top of the rail flange and the other upon said surface.

For a better understanding of the invention and to show how the same may be carried into effect, reference will now be made to the accompanying drawing in which:

FIGURE 1 is a view, in elevation, of a railway rail and anchoring means therefor, the view being taken in the direction of the length of the rail,

FIGURE 2 is a plan view of the parts shown in FIGURE 1, and,

FIGURE 3 is a side view, as seen from the right, of FIGURE 2.

In the drawings, a rail **1** has a flange **2** which is seated between a pair of ribs **3** forming part of a base plate. The latter is secured to a sleeper (not shown), for example by means of screws or spikes passing through holes **5** in the base plate.

The base plate is made of sheet material and the ribs **3** are formed by bending the sheet material. It is apparent from the drawings that beneath the ribs **3** are formed passages **6** which are open at both ends and extend alongside the rail and parallel with the length of the rail.

Also illustrated are two identical fastening members, each consisting of a bent length of so-called "rod iron" which, as is well known, is preferably in fact steel. Each fastening member can be regarded as consisting of five portions which succeed one another along the length thereof. These five portions are:

(1) A first portion which constitutes a straight leg **7** extending from the end marked **10** in FIGURE 2 to about the position of the dotted line marked **11**.

(2) A second portion which constitutes a reverse bend **12** extending from the end of the leg **7** (at about the line **11**) to about the position of the line marked **13** in FIGURE 2. As can be seen from FIGURE 1, when the fastening member is in position the reverse bends **12** extend not only towards the rail but also upwardly, so that the part adjacent the line **13** is higher than that adjacent the line **11**. However, the last-mentioned condition is not absolutely essential and in some cases, depending upon the vertical position of the passage **6**, it may not be adopted.

(3) A third portion **9** which extends generally in the direction of the end **10** of the leg **7**, that is to say generally downwardly as seen in FIGURE 2 (on the right-hand side of the rail). This third portion extends from about the position of the line marked **13** to about the position of the line marked **14**. The portion **9** in the illustrated example appears, when viewed as in FIGURE 2, to be straight and parallel to the leg **7**, but the illustrated degree of proximity to the truly straight condition and the truly parallel relationship is not essential.

(4) A fourth portion **15** which extends from about the position of the line marked **14** to about the position of the line marked **16**. The portion **15** extends generally to that side of the portion **9** upon which the leg **7** is situated, that is to say it extends generally to the right (considering the fastening member shown to the right of the rail in FIGURE 2), as distinct from extending to the left or purely upwardly or downwardly. The portion **15**, as is apparent from FIGURE 1, does in fact lead slightly upwardly and then downwardly, as it extends laterally from the portion **9**, in order to leave adequate space between the part **15** and the leg **7** for the latter to be fitted in the passage **6** in the manner to be described.

(5) A fifth portion **8** which extends in the general direction of the junction (line **11**) between the leg **7** and the portion **12**. This is not to be taken as meaning that the portion **8** must point directly to the line **11** but that the portion **8** extends generally upwardly when viewed as in FIGURE 2. In the illustrated example, when the portion **8** is viewed in plan, it appears to be straight and parallel to the leg **7**, but the illustrated degree of proximity to the truly straight condition and the truly parallel relationship is not essential. The radius of curvature of the reverse-bend portion **15** is greater than that of the reverse-bend portion **12**, with the result that, considering the right-hand half of FIGURE 2, the portion **15** crosses the leg **17** and the portion **8** is consequently to the right of the leg **7**.

In assembling the illustrated parts, the leg **7** of one fastening member is inserted in one end of one of the passages **6** and the leg **7** of the other fastening member is inserted in the opposite end of the other passage **6** so that the free ends of the two legs **7** extend in opposite directions. The two fastening members are driven home by hammering at the portions **12**, whereupon each portion **9** will bear upon the top of the flange **2** and each portion **8** will bear very firmly upon the top of the base plate, which affords a fixed, unyielding surface outward of the adjacent passage **6**, as seen from the rail. The fastening member will act as a lever having its fulcrum extending along the axis of the leg **7** and it will be appreciated that both upward and longitudinal movement of the rail will be resisted.

Instead of adopting the illustrated construction, the base plate could be dispensed with and the ribs **3** and passages **6** could be formed in the sleeper itself. The passages **6**, in all cases, must be closed at the top, that is to say it must be impossible for the legs **7** to move upwardly. The fastening members described above will be made from metal rod having a thickness or diameter of at least 1 centimetre.

I claim:

1. In combination, a fastening member comprising a length of resilient metal of rod form which is bent so as to have, progressing from one end of the length of metal to the other, a first portion which constitutes a substantially straight leg, then a second portion in the form of a reverse bend, then a third portion extending generally in the direction of said one end, then a fourth portion which extends from the third portion, generally to that side thereof upon which said leg is disposed, and constitutes a further reverse bend, and finally a fifth portion extending in the general direction towards the junction between the first and second portions, a railway rail, a flange at the base of the rail, a fixed anchorage member disposed adjacent the rail, portions of said anchorage member defining a passage which extends alongside the rail, parallel to the length of the rail, and is closed at the top and open at least at one end, and a fixed unyielding surface which, as seen from the rail, is disposed outward of said passage, the fastening member having said first portion thereof inserted in said one end of the passage and said third and fifth portions thereof bearing one upon the top of the rail flange and the other upon said surface.

2. A combination according to claim 1, wherein the anchorage member is a base plate which extends beneath the rail on both sides thereof and is secured to a railway sleeper.

3. A combination according to claim 2, wherein the base plate is formed with two upwardly projecting ribs which extend parallel with the length of the rail and between which the rail is seated.

4. A combination according to claim 3, wherein the aforementioned passage is formed on the underneath side of the plate, beneath one rib.

5. A combination according to claim 1, wherein the anchorage member is a railway sleeper which extends beneath the rail and on both sides thereof.

6. A combination according to claim 5, wherein the sleeper is formed with two upwardly projecting ribs which extend parallel with the length of the rail and between which the rail is seated.

7. In combination, two fastening members each comprising a length of resilient metal of rod form which is bent so as to have, progressing from one end of the length of metal to the other, a first portion which constitutes a substantially straight leg, then a second portion in the form of a reverse bend, then a third portion extending generally in the direction of said one end, then a fourth portion which extends from the third portion, generally to that side thereof upon which said leg is disposed, and constitutes a reverse-bend having a radius of curvature much larger than that of the second portion, and finally a fifth portion extending in the general direction towards the junction between the first and second portions, a railway rail, a flange at the base of the rail, a fixed anchorage member which extends beneath the rail and projects upon both sides thereof, portions of said anchorage member defining first and second passages which extend alongside the rail, one on each side thereof, parallel to the length of the rail and which are each closed at the top and open at least at one end, and first and second fixed unyielding surfaces which, as seen from the rail, are disposed outward of the first and second passages, respectively, the first portions of the first and second fastening members being inserted in opposite directions into the first and second passages, respectively, with the third and fifth portions of each member bearing one upon the top of the rail flange and the other upon the adjacent unyielding surface aforementioned.

References Cited in the file of this patent

UNITED STATES PATENTS

193,389	Wright	July 24, 1877
485,097	Fay	Oct. 25, 1892
1,367,401	Knight	Feb. 1, 1921
1,942,464	Willard	Jan. 9, 1934
2,154,151	Delfox	Apr. 11, 1939
2,162,365	Willard	June 13, 1939
2,816,715	Gronn	Dec. 17, 1957
2,822,593	Sponsel	Feb. 11, 1958

FOREIGN PATENTS

835,674	France	Oct. 3, 1938