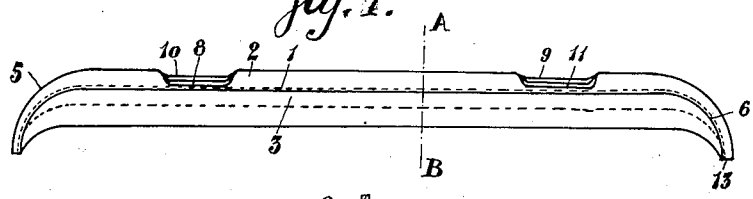
Aug. 7, 1934. F. DE ROSSIUS D'HUMAIN 1,969,062

RAILWAY SLEEPER

Filed July 8, 1932

Fig. 1.



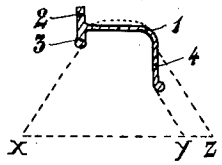


Fig. 2

Fig. 3.

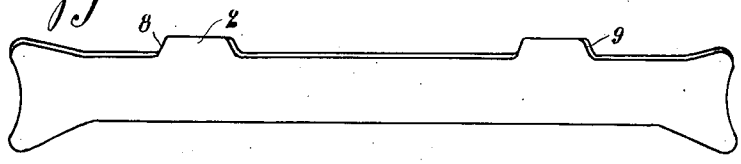


Fig. 5

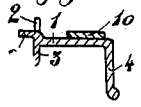


Fig. 4

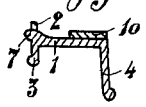


Fig. 6

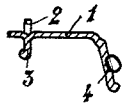
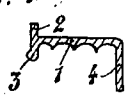


Fig. 7.



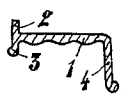
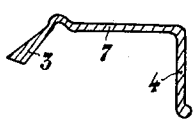


Fig. 8.

Fig. 9



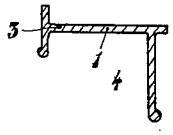


Fig. 10.

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RAILWAY SLEEPER

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Application July 8, 1932, Serial No. 621,458
In Belgium July 9, 1931

10 Claims. (Cl. 238—59)

The invention relates to a system of railway sleepers which is more particularly intended for supporting the rail joints.

It is known that, all things being equal, the best sleeper for the rail joint is that which provides the maximum useful supporting surface on the ballast. The sleepers which are known at the present time for supporting the rail joints suffer, however, from the serious disadvantage that they cannot be packed or tamped rationally on account of their height and the large interspace between their lateral walls, and that they do not lend themselves to the operations of packing up and of "filling."

The present invention relates to a system of sleepers permitting supports to be provided which have large carrying surfaces and do not suffer from the disadvantage referred to hereinbefore.

The invention relates to a metal railway sleeper having a top terminated longitudinally on one side with a flange intended to penetrate in the ballast to a depth between 4 and 12 inches and on the other side with another flange the depth of which is comprised between the ⅓ and the ⅙ of the depth of the first flange without exceeding 2 inches.

The invention likewise provides various forms of sleepers which can be easily made by rolling and which afford the advantages referred to hereinbefore.

Figure 1 is a longitudinal view of the sleeper according to one form of my invention.

Figure 2 is a cross-section of Figure 1 taken along line A—B.

Figure 3 is a plan view of the sleeper.

Figures 4, 5 and 6 show sections of the sleeper perpendicular to the rail, corresponding to distinct constructional forms.

Figures 7 to 10 relate to modifications of the sleeper according to the invention.

The top 1 of the sleeper, which top may be flat or arched (as shown in dotted lines in Figure 2), is provided with a longitudinal flange 4 acting as the anchorage.

The lower flange 3 is of small height so as not to constitute an obstacle for easy packing of the ballast under the sleeper and for the "filling."

In order to provide the sleeper with sufficient resistance to bending, the top is provided with an upper flange 2 which is given the section required by the moment of inertia of the sleeper. Vertically below the rails, however, this flange 2 may be bent back at 8 and 9 to the level of the base of the rails so that the latter bear on the flange as well as on the top of the sleeper (see also Figure 5). Instead of turning down the flange 2 by bending it as at 8 and 9, it may likewise be upset with dies. In each case, care will be taken to give to the bends 8 and 9 or to the upset portions 7 a sufficient bearing surface to prevent their friction on the rails from causing any detrimental wear to the latter.

At each of its ends the sleeper top is bent at right-angles to its axis, the two bent portions 5 and 6 being intended to act at one and the same time as feet for the sleeper and as lateral anchorages for opposing the transverse displacement of the sleeper.

In order to construct the feet 5 and 6, the entire arrangement, that is to say the top and its flanges, is curved with the least possible deformation of the latter.

The transverse feet or anchorages may likewise be constructed without the flanges 2, 3 and 4 at these places, or the said flanges may even be incorporated in the curved ends of the top by stamping.

It will be observed that, due to the form of the top and the small height of the flange 3, and taking into consideration the normal distance between sleepers, the packing of the latter may be effected along a substantially horizontal direction, that is to say, under ideal conditions as regards speed and efficiency.

It will likewise be observed that, due to its substantially vertical position in the ballast, the longitudinal anchorage, even during its alternating vertical movements, is unable to disaggregate the body of ballast acting as its support, contrary to what occurs with the inclined flanges of existing metal sleepers.

The ribs 2 and 3 may be inclined relatively to the top of the sleeper and may have trapezoidal sections to permit construction by rolling.

Another method of manufacture would be to roll the sleeper in the form of a large flat section provided with the double rib 2—3, the flat section being afterwards bent to form the longitudinal anchorage.

Figure 6 indicates the construction of a sleeper without a supporting plate. Opposite the rail and the fastenings, the top 1 is elevated and is substantially on a level with the rib 2 in its bent section. This elevation may be made along the entire sleeper or may be only provided vertically below the rail. It may also be provided by means of a greater thickness of metal opposite the rails, which thickness will be obtained by a suitable form of the rolling mill rolls.

Figure 8 shows a sleeper top section with rounded longitudinal increased thicknesses, and Figure 7 shows a top with angular increased thicknesses. Such sleepers are particularly intended when it is desired to ensure great stability of the ballast underneath the sleeper top, the hollows and the full portions which determine the increased thicknesses preventing the ballast from being displaced laterally below the sleeper.

Figure 9 shows a form which may be given to the sleeper without departing from the scope of the invention. It will be seen that in this figure, the top 1 is connected to the lower flange 3 by an undulation, the height of which is very accentuated.

Figure 10 shows another modification of the construction of the metal sleeper, in which the top 1 is extended slightly beyond the large flange 4 which is to penetrate the ballast.

In the various figures referred to hereinbefore, the longitudinal anchorage makes an angle of 90° with the top. In certain cases, this angle may likewise be given any value and particularly more than 90°, say, for example, the angle corresponding to the base which the body of ballast supporting the sleeper should have. This angle will thus be 90° for a base of $x\,y$, Figure 2 for example, and more than 90° in the case of a base of $x\,y + y\,z$.

The depth of the flanges set forth hereinbefore has been selected in order to permit the tamping and filling operations necessary for the proper setting of the sleepers.

The operation of tamping consists of compressing the ballast directly under the sleeper with the aid of a pick or pick-hammer.

The operation of "filling", which particularly has for its object the raising of the track with precision, is effected in the following manner: the sleeper is slightly raised, then a flat shovel covered with a thin layer of a determined quantity of small broken stones is introduced. The shovel is removed suddenly and the layer of broken stones remains between the flat portion of the sleeper and the mold.

With flanges of the dimensions set forth hereinbefore, it will be possible to raise the sleeper to a height to permit the introduction of a flat shovel under the short flange and yet the long flange will still remain in the cavity formed in the filling material. Thus, it will be realized that the present invention provides a device which has many outstanding advantages.

What I claim is:

1. A metal railway sleeper having a top terminated longitudinally on one side with a flange intended to penetrate in the ballast to a depth between 4 and 10 inches and on the other side with another flange the depth of which is approximately ¼ the depth of the first flange.

2. A metal railway sleeper having a top terminated longitudinally on one side with a flange intended to penetrate in the ballast to a depth between 4 and 10 inches and on the other side with a flange of very small depth with respect to the first flange, an additional flange disposed on the top above the flange of lesser depth.

3. A metal railway sleeper having a top terminated longitudinally on one side with a flange intended to penetrate in the ballast to a depth between 4 and 10 inches and on the other side with a flange of very small depth with respect to the first flange, said flanges being united to the top at an angle about 90°.

4. A metal railway sleeper having a top terminated longitudinally on one side with a flange intended to penetrate in the ballast to a depth between 4 and 10 inches and on the other side with a flange of very small depth with respect to the first flange, an additional flange disposed on the top above the flange of lesser depth, said additional flange being turned down at the place of the rail so as to constitute a supporting surface for the base of the rail.

5. A metal railway sleeper having a top terminated longitudinally on one side with a flange intended to penetrate in the ballast to a depth between 4 and 10 inches and on the other side with a flange of very small depth with respect to the first flange, and longitudinal ribs provided on the lower face of the top.

6. A metal railway sleeper having a top terminated longitudinally on one side with a flange intended to penetrate in the ballast to a depth between 4 and 12 inches and on the other side with another flange the depth of which is comprised between ⅓ and ⅙ of the depth of the first flange without exceeding 2 inches.

7. A metal railway sleeper having a top terminated longitudinally on one side with a flange intended to penetrate in the ballast to a depth between 4 and 12 inches and on the other side with a flange the depth of which is comprised between ⅓ and ⅙ of the depth of the first flange without exceeding 2 inches, and an additional flange disposed on the top above the flange of lesser height.

8. A metal railway sleeper having a top terminated longitudinally on one side with a flange intended to penetrate in the ballast to a depth between 4 and 12 inches and on the other side with a flange the depth of which is comprised between ⅓ and ⅙ of the depth of the first flange without exceeding 2 inches, said flanges being united to the top at an angle about 90°.

9. A metal railway sleeper having a top terminated longitudinally on one side with a flange intended to penetrate in the ballast to a depth between 4 and 12 inches and on the other side with a flange the depth of which is comprised between ⅓ and ⅙ of the depth of the first flange without exceeding 2 inches, and an additional flange disposed on the top above the flange of lesser height, said additional flange being turned down at the place of the rail.

10. A metal railway sleeper having a top terminated longitudinally on one side with a flange intended to penetrate in the ballast to a depth between 4 and 12 inches and on the other side with a flange the depth of which is comprised between ⅓ and ⅙ of the depth of the first flange without exceeding 2 inches, and longitudinal ribs provided on the lower face of the top.

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