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54 **Railway sleeper.**

57 A railway sleeper (1) has an under surface that is curved in order to enable the sleeper to be positioned in a tunnel so that a major part of the under surface and preferably substantially the entire under surface is in contact with the tunnel wall. The sleeper is preferably formed from sheet metal and has a central part formed from a single strip of sheet metal that is curved to lie flat on the tunnel wall. The sleeper may include a pair of baseplates (4,5) for supporting rails of the railway track, which are also formed from sheet metal, and a rib (10) formed in the sheet metal of the sleeper and located under each baseplate for supporting part of the load from the rail.

This invention relates to railway sleepers

When track is laid in tunnels, it is conventional to lay sleepers across the tunnel so that the ends of the sleepers bear on the tunnel wall, and to locate a pad at the end of each sleeper in order to distribute stress applied by the sleeper on the tunnel wall. We have found, however, that the stress exerted on the wall can still lead to damage of the wall.

According to the present invention, there is provided a railway sleeper having an under surface that is curved in order to enable the sleeper to be positioned in a tunnel so that a major part of the under surface is in contact with the tunnel wall.

Preferably the sleeper is designed so that at least 75% of the under surface, and especially substantially the entire under surface, is capable of bearing on the tunnel wall in use. This has the advantage that the stresses applied by the sleeper on the tunnel wall are substantially reduced with respect to existing designs, with consequential reduction or even elimination of damage to the tunnel wall by the sleeper.

The sleeper may conveniently be formed from sheet metal. In such a case the central part of the sleeper, spanning the rails in use is preferably formed from a single strip of sheet metal that is curved to lie flat on the tunnel wall. This construction has the advantage that it has a very low profile in the central part of the sleeper and exhibits little or no obstruction for example to personnel walking along the track. The sleepers can have a relatively low weight and can easily be transported, installed and removed.

Normally a baseplate for a rail of the track will be provided in the region of each of the sleeper, the baseplate preferably also being formed from sheet metal. It is possible for the baseplates to be formed from the same sheet metal as that of the remainder of the sleeper, for example by folding back the ends of the sleeper preform to form a pair of flat surfaces, but in the preferred design, the baseplate is formed from sheet metal that is thicker than that forming the remainder of the sleeper. For example the baseplates may be formed from steel having a thickness of from 12 to 15mm while the remainder may be formed from steel having a thickness in the range of 8 to 12mm.

One form of sleeper in accordance with the present invention will now be described by way of example with reference to the accompanying drawings, in which:

Figure 1 is a side elevation of the sleeper; and

Figure 2 is a top plan view of the sleeper.

Referring to the accompanying drawings a sleeper 1 according to the present invention comprises a base 2 that spans the distance between the rails (one such rail 3 being shown in phantom), and a pair of baseplates 4 and 5 that are located at either end of the base 2. The base 2 is curved to form a segment of a circle of radius 1.22m which corresponds to the internal radius of the tunnel in which the sleeper will

be used. Each baseplate 4 and 5 is generally in the shape of an upturned U having one side arm 6 that is longer than the other side arm 6' so that the central part 7 thereof that forms a base for the rails between two locating ribs 8 and 9 will be horizontal.

A supporting rib 10 is formed in the steel sheet forming the base 2 of the sleeper beneath the central part 7 of each baseplate 4 and 5 so that its apex abuts the under surface of the central part and is directly below the centre of the rail placed on the baseplate. By this means the load on the rail is transferred to the base 2 via the arms 6 and 7 of the baseplates and the supporting rib 10, and is transferred to the tunnel floor over substantially the entire under surface of the sleeper base 2.

Claims

1. A railway sleeper having an under surface that is curved in order to enable the sleeper to be positioned in a tunnel so that a major part of the under surface is in contact with the tunnel wall.
2. A sleeper as claimed in claim 1, wherein substantially the entire under surface is capable of bearing on the tunnel wall in use.
3. A sleeper as claimed in claim 1 or claim 2, which is formed from sheet metal.
4. A sleeper as claimed in claim 3 which has a central part that is formed from a single strip of sheet metal that is curved to lie flat on the tunnel wall.
5. A sleeper as claimed in claim 4 which includes a baseplate in the region of each end thereof for supporting rails, the baseplates being formed from sheet metal.
6. A sleeper as claimed in claim 5, wherein the baseplates have been formed by folding back each end of the strip of sheet metal to form a pair of flat surfaces.
7. A sleeper as claimed in claim 5, wherein the baseplates are formed from separate pieces of sheet metal that are thicker than the sheet metal forming the central part of the sleeper.
8. A sleeper as claimed in any one of claims 5 to 7, which includes a pair of supporting ribs formed in the strip of sheet metal, each supporting rib abutting the under surface of an associated baseplate.
9. A sleeper as claimed in claim 8, wherein each rib is formed as a fold in the strip of sheet metal.

