Jan. 15, 1929. **1,699,197**

C. LÖSSL

TRAVERSE SLEEPER OF ARMORED CONCRETE

Filed March 31, 1927 2 Sheets-Sheet 1

Fig. 1.

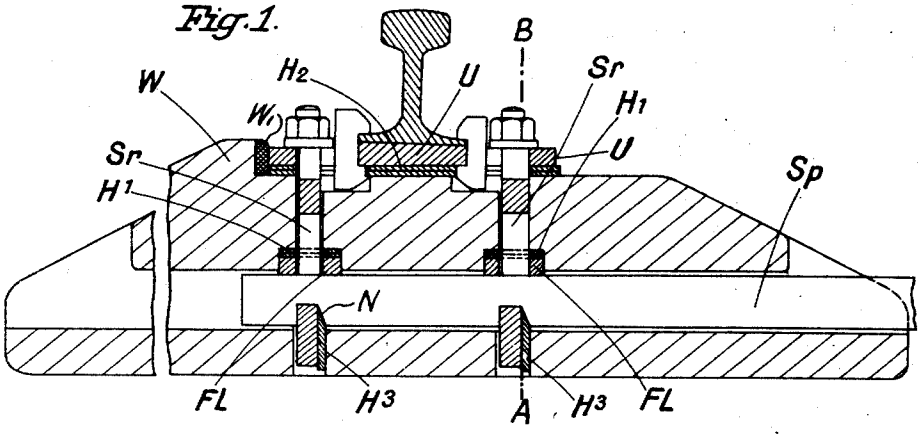


Fig. 2.

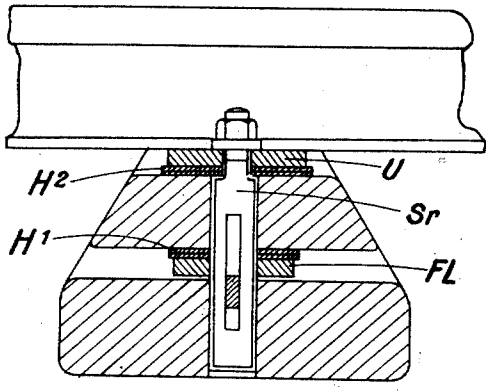
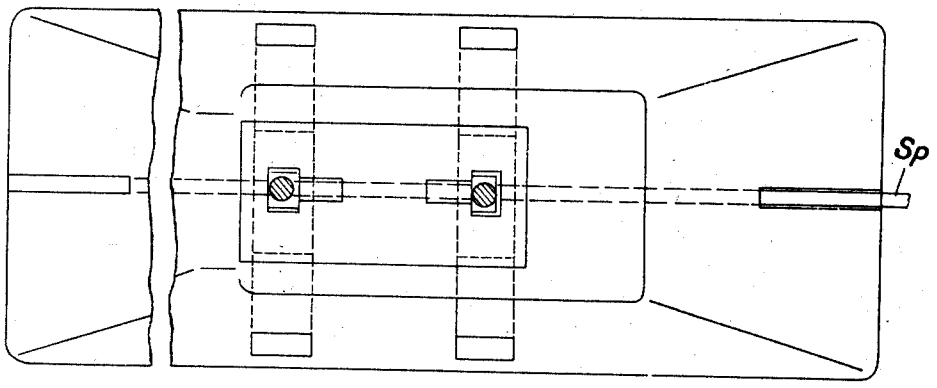


Fig. 3.



Inventor:
C. Lössl
By: Marks & Clark
Attys.

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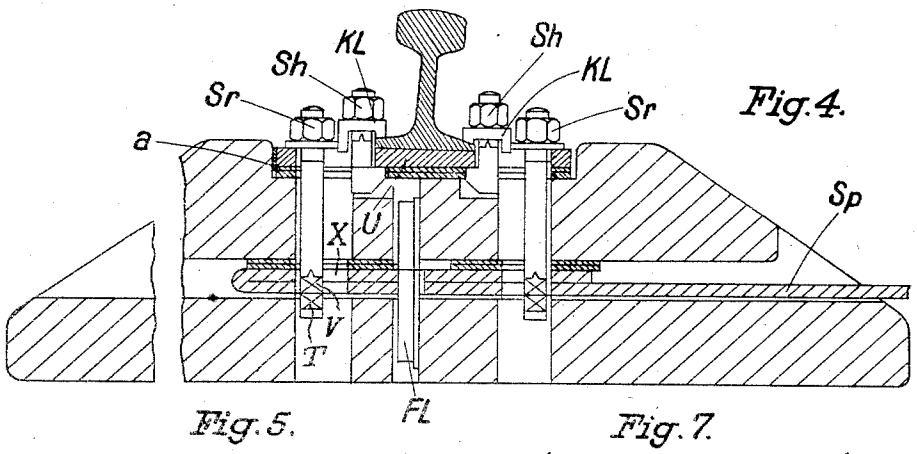


Fig. 4.

Fig. 5.

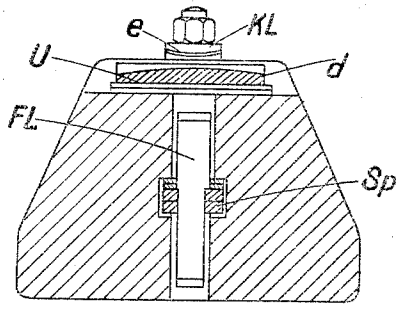


Fig. 7.

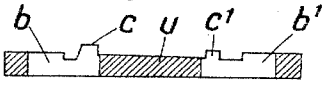


Fig. 8

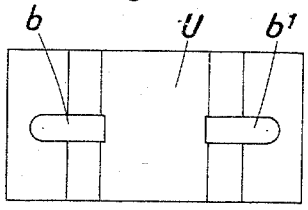
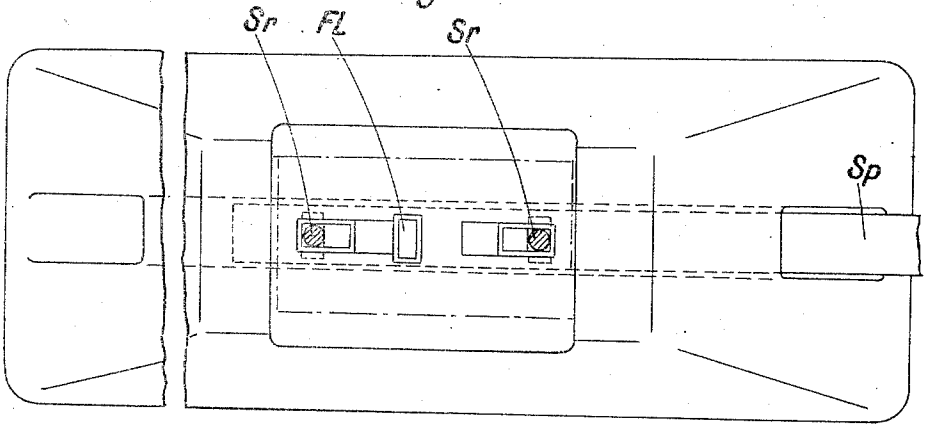


Fig. 6.



Inventor:
C. Lössl
By: Marks & Clerk
Attys.

Patented Jan. 15, 1929. 1,699,197

UNITED STATES PATENT OFFICE.

CARL LÖSSL, OF GAUTING, NEAR MUNICH, GERMANY.

TRAVERSE SLEEPER OF ARMORED CONCRETE.

Application filed March 31, 1927, Serial No. 179,948, and in Germany August 19, 1924.

The invention relates to a traverse sleeper which is formed of two separate supporting bodies connected to each other by the aid of a track or gauge rod of iron, and consists in such an arrangement, that the screws serving for securing the sole plates of the rails to the supporting bodies clutch the track or gauge rod in such a manner, that they serve by their engagement with the gauge rod for the fastening of the sole plates to the supporting bodies as well as for the determination of the track or gauge.

Therefore two problems are solved in a simple manner by one and the same technical means.

For the purpose of unloading or relieving the securing screws from too high stresses, according to the invention in a corresponding recess of the body of concrete and preferably below the rail a crossbar of flat iron may be arranged, which joins the track rod and the body of concrete. Furthermore the rail may be guided between ribs of the sole plate and tightened to the sole plate by means of special clips and hook-shaped screws, so that a further unloading of the securing screws is obtained. All securing means are suitably arranged in a plane and in such a manner, that always one hammer-shaped securing screw and one hook-screw are arranged in a common slot of the sole plate. In this manner the sole plate is weakened the least and the superficial pressure on the body of concrete diminished as far as possible.

The hammer-shaped securing screws are grappled by their heads at the lower side of the flat-lying gauge rod, which has the form of a steel band. For this purpose the gauge rod is provided with a rectangular recess, through which the head of the securing screw is passed from above, whereupon by turning the screw 90° a simple grappling is obtained.

For enlarging the counter-bearing for the tightening with the sole plate of the rail as far as possible, the ends of the gauge rod are suitably folded together one or several times and eventually welded together. In this manner the cross-section of the counter-bearing is considerably increased.

In the drawing some modifications are shown.

Figs. 1, 2 and 3 show in longitudinal section, in cross-section and in plan, respectively, the new fastening of the rail without unloading of the securing screws and with a gauge rod having its edge upwards directed.

Figures 4, 5 and 6 show a rail fastening according to the invention in longitudinal section, cross section and plan with unloaded securing screws or bolts and a flat lying band-shaped gauge rod.

Figures 7 and 8 show the sole plate for the rail in cross section and plan respectively.

In the modification according to Figs. 1–3 the securing screws S_r fixing the sole plate of the rail to the supporting body, have a lower portion of rectangular cross-section and rectangular holes, through which the gauge rod S_p passes. The latter possesses notches N, with which the screws engage. The gauge rod therefore forms the counter-bearing for the screws and the screws are at the same time the counter-bearing for the gauge rod.

The two flat irons F_1 act to transmit the pressure to the concrete body by means of an intermediate layer H_1 of pressed paper.

The flat irons F_1 are inserted laterally into the body of concrete and the screws S_r are passed through the same, before being in connection with the gauge rod. The plate H_2 of pressed paper is arranged between the sole plate U of the rail and the body of concrete. By means of the two resilient plates H_1 and H_2 the screw-joint remains permanently in elastic tension. The plates H^3 of pressed paper act to transmit the pressures caused by the gauge rod from the iron surfaces to the concrete. The lateral pressures exerted on the rails by the wheels of the train are transmitted immediately by the sole plate of the rail to the body of concrete and this by means of a counter-bearing W of the body of concrete. The face W_1 of the counter-bearing, which is exposed to these pressures, consists of concrete armored with steel.

In the modification according to Figs. 4–8 the securing screws S_r are partially unloaded of the occurring forces.

The gauge rod S_p having the shape of a thin, broad band of steel lies flat. Both ends of the rod serve immediately for counter-bearing for the connection of the sole plate with the body of concrete. The gauge rod therefore is brought into an elastic connection with the bodies of concrete.

As elastic intermediate layers of permanently resilient material are provided between the sole plate and the supporting body

of concrete and between the counter-bearing of the gauge rod and the supporting body of concrete, the connection remains permanently elastic, and as also the counter-bearing of the gauge rod has large dimensions, the superficial pressures upon the supporting body of concrete are small and permanently transmitted to this latter in a permanently elastic manner. A wear of the supporting body of concrete is therefore obviated.

A rigid gauge rod of iron (bar, beam of flat iron with upwards directed edge) causes stresses of the supporting body at the places of assemblage, because a mutual though small displacement of the two supporting bodies is unavoidable in consequence of inaccuracies of embedding the same.

The thin, broad and flat lying rod of steel permits the yielding in all directions and prevents thus these uncontrollable stresses of the supporting bodies of concrete.

The locking of the gauge rod for the purpose of exact maintainance of the gauge and transmission of the gauge-pressures on the supporting bodies of concrete is obtained by a flat iron F_1 which is passed from above by the aid of a corresponding hole in the supporting body through the gauge rod and rides upon the latter by means of an enlargement of its upper portion. This flat iron has also large surfaces for the transmission of pressure, so that only small superficial pressures are exerted on the concrete, and also here an elastic intermediate layer is provided for the purpose of permanently elastic transmission of force and of avoidance of wear.

The head screws S_r effecting the connection of the sole plate of the rail with the supporting body of concrete by means of the gauge rod serving for counter-bearing, are also passed from above through the gauge rod by means of corresponding holes in the supporting body. The rectangular head of the screw is passed through a corresponding slot in the gauge rod and then the screw is turned. Above its head T the screw S_r has a portion of square cross section V which exactly fits into the slot X of the gauge rod preventing from turning the screw when being tightened. For the purpose of obtaining a sufficient strength of the gauge rod at the counter-bearing, where it is weakened by the rectangular recesses for the screws and the locking flat iron, the cross-section is increased in its height by folding one or several times the ends of the rod and by welding together these folds.

The gauge pressures are transmitted to the supporting body of concrete at first by the exterior front surface *a* of the sole plate of the rail. An elastic intermediate means is arranged also at this place.

The screw-joint of the sole plate is not exposed to the gauge pressures.

Intentionally the rail is not connected to the supporting body of concrete directly, but independently by means of two hook-screws S_h to the sole plate.

Besides the elastic means between the sole plate and the supporting body of concrete, this arrangement is of special importance for avoiding dangerous dynamic stresses of the supporting body of concrete. The efforts etnding to loosen the rail in consequence of the lateral thrusts are restricted to its connection with the sole plate, whilst the latter remains permanently in rigid and elastic connection with the supporting body of concrete. The beating stress of the supporting body, caused by the pressure of the wheels, which occurs when the connection between the sole plate and the supporting body is loosened, is thus obviated.

The permanent and solid connection of the sole plate and the supporting body, which is still more secured by the elastic intermediate means, has also the effect, that the gauge pressures can occur at the front face *a* only in a very reduced degree, so that also here in spite of the small surface only small superficial pressures exist.

The connecting screws S_h and S_r are all arranged in the same vertical plane in the direction of the middle-line of the sole plate, as shown in the drawing. The heads of each two screws are passed through the same slot *b* and b_1 in the sole plate.

The rail is tightened between the two ribs *c* and c_1 of the sole plate. The outer rib *c* absorbs the gauge pressures and both ribs prevent the hook-screws from being influenced by the shearing stresses of the gauge pressures.

The face *d* of the sole plate between the two ribs *c* and c_1 where the rail rests, and also the operative surface of the press-plate K are curved or arched, and this in the longitudinal direction of the rail as shown in the drawing.

By this arrangement of the screw-connection and formation of the sole plate a choking of the connection cannot occur, when the rails are bent by the load. The connection is by this means more durable and the friction between the rail and the sole plate is reduced to a minimum, so that at the shifting of the rails the concrete body and its connection with the sole plate and rail are accommodated as far as possible.

What I claim is:

1. In concrete traverse sleepers the combination of two supporting concrete bodies, a gauge rod connecting and fixing said bodies at a predetermined distance, rail sole plates arranged on said supporting bodies, and securing screws for fastening the sole plates to the supporting bodies and engaging the gauge rod.

2. In concrete traverse sleepers the combination of two supporting concrete bodies, a gauge rod connecting and fixing said bodies

at a predetermined distance, rail sole plates arranged on said supporting bodies, and securing screws for fastening the sole plates to the supporting bodies and engaging the gauge rod, said screws and said gauge rod provided with cooperating means for adapting their engagement.

3. In concrete traverse sleepers the combination of two supporting concrete bodies, a gauge rod connecting and fixing said bodies at a predetermined distance, rail sole plates arranged on said supporting bodies, securing screws for fastening the sole plates to the supporting bodies and engaging the gauge rod, said screws and said gauge rod provided with cooperating means for adapting their engagement, and means below the rail and connected with the rail and securing screws for unloading the screws.

4. In concrete traverse sleepers the combination of two supporting concrete bodies, a gauge rod connecting and fixing said bodies at a predetermined distance, rail sole plates arranged on said supporting bodies, securing screws for fastening the sole plates to the supporting bodies and engaging the gauge rod, said screws and said gauge rod provided with cooperating means for adapting their engagement, and locking means connected with said gauge for maintaining it in a predetermined position and transmitting the gauge pressure on the supporting concrete bodies.

5. In concrete traverse sleepers the combination of two supporting concrete bodies, a gauge rod connecting and fixing said bodies at a predetermined distance, rail sole plates arranged on said supporting bodies, securing screws for fastening the sole plates to the supporting bodies and engaging the gauge rod, said screws and said gauge rod provided with cooperating means for adapting their engagement, locking means connected with said gauge for maintaining it in a predetermined position and transmitting the gauge pressure on the supporting concrete bodies, and an elastic cushion connected with said locking means.

6. In concrete traverse sleepers the combination of two supporting concrete bodies, a gauge rod connecting and fixing said bodies at a predetermined distance, rail sole plates arranged on said supporting bodies, securing screws fixing said sole plates to the supporting bodies and provided with rectangular shaped apertures in their lower portions for the passage of said gauge rod, and notches in said gauge rod co-operating with said apertures in the screws.

7. In concrete traverse sleepers the combination of two supporting concrete bodies, a gauge rod connecting and fixing said bodies at a predetermined distance, rail sole plates arranged on said supporting bodies, securing screws fixing said sole plates to the supporting bodies and provided with rectangular shaped apertures in their lower portions for the passage of said gauge rod, notches in said gauge rod cooperating with said apertures in the screws, and locking bars of flat iron inserted in a recess in said bodies below the rails having apertures for the passage of said screws.

8. In concrete traverse sleepers the combination of two supporting concrete bodies, a gauge rod connecting and fixing said bodies at a predetermined distance, rail sole plates arranged on said supporting bodies, securing screws fixing said sole plates to the supporting bodies and provided with rectangular shaped apertures in their lower portions for the passage of said gauge rod, and notches in said gauge rod cooperating with said apertures in the screws, and a counter-bearing on said supporting bodies for the outer face of the sole plate for absorbing the lateral stresses exerted by the gauge pressure.

9. In concrete traverse sleepers the combination of two supporting concrete bodies, a gauge rod connecting and fixing said bodies at a predetermined distance, rail sole plates arranged on said supporting bodies, securing screws fixing said sole plates to the supporting bodies and provided with rectangular shaped apertures in their lower portions for the passage of said gauge rod, notches in said gauge rod cooperating with said apertures in the screws, locking bars of flat iron inserted in a recess in said bodies below the rails having apertures for the passage of said screws, and a counter-bearing on said supporting bodies for the outer face of the sole plate for absorbing the lateral stresses exerted by the gauge pressure.

In testimony whereof I affix my signature.

CARL LÖSSL.