G. LIEBEAUX & F. HENNEBIQUE.

BLOCK FOR RECEIVING RAIL FIXING DEVICES IN REINFORCED CONCRETE SLEEPERS.

APPLICATION FILED JUNE 27, 1908.

932,300. Patented Aug. 24, 1909.

2 SHEETS—SHEET 1.

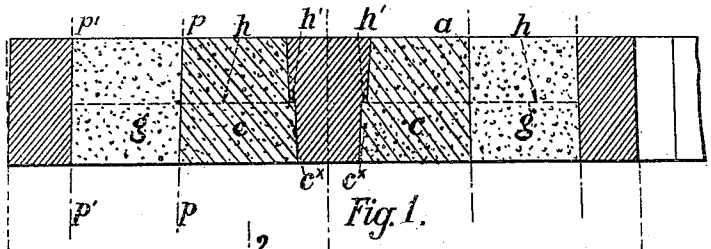


Fig. 1.

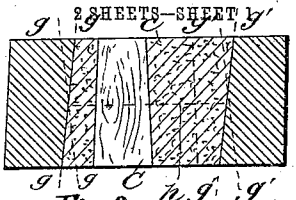


Fig. 3.

Fig. 3a

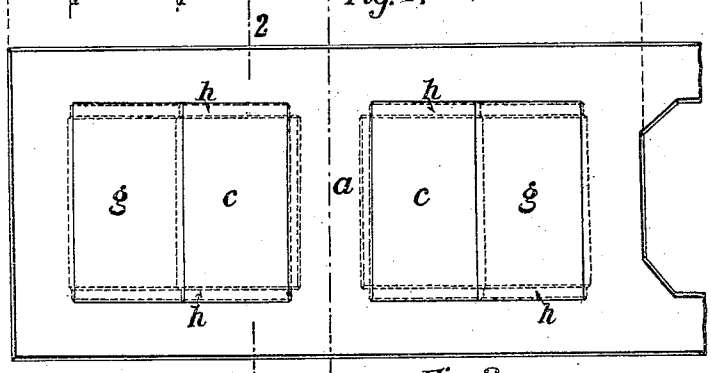


Fig. 2.

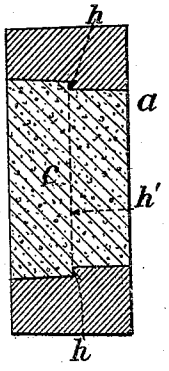


Fig. 7.

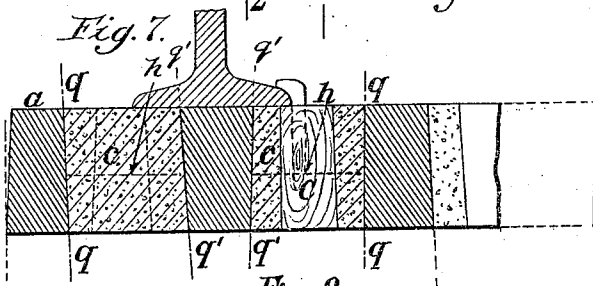


Fig. 8.

Fig. 9.

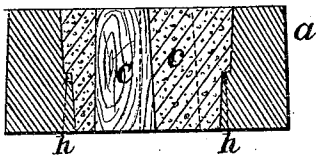
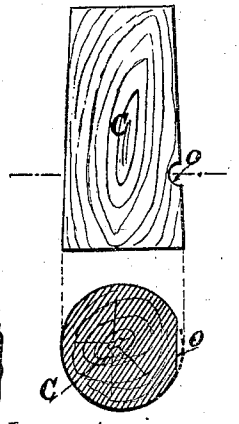


Fig. 14.



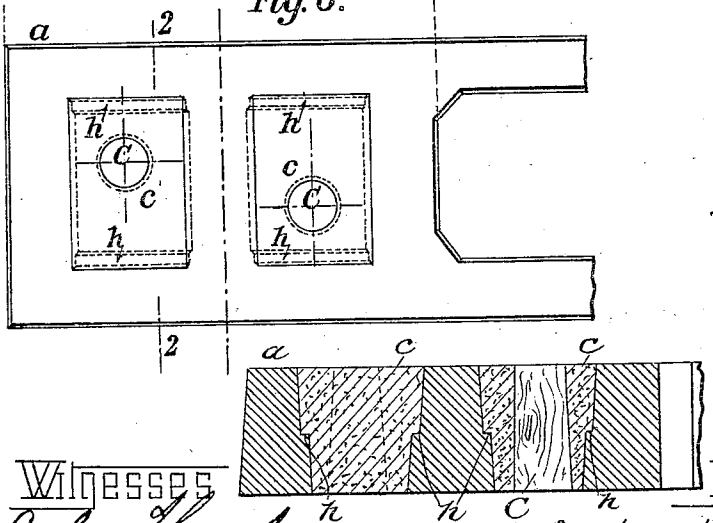


Fig. 7a.

Witnesses

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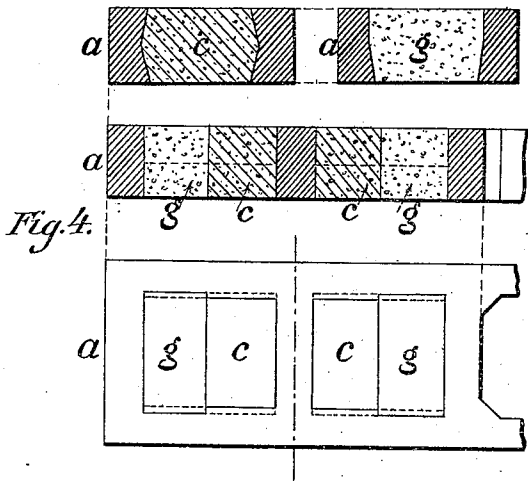


Fig.4.

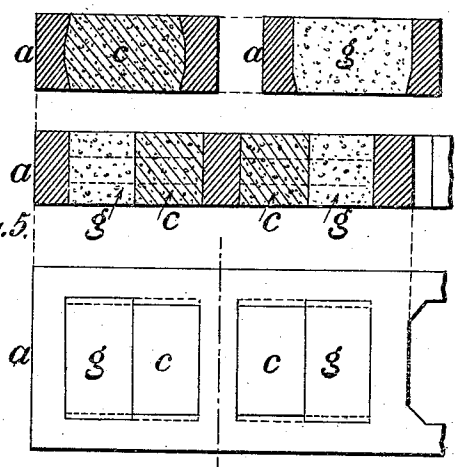


Fig.5.

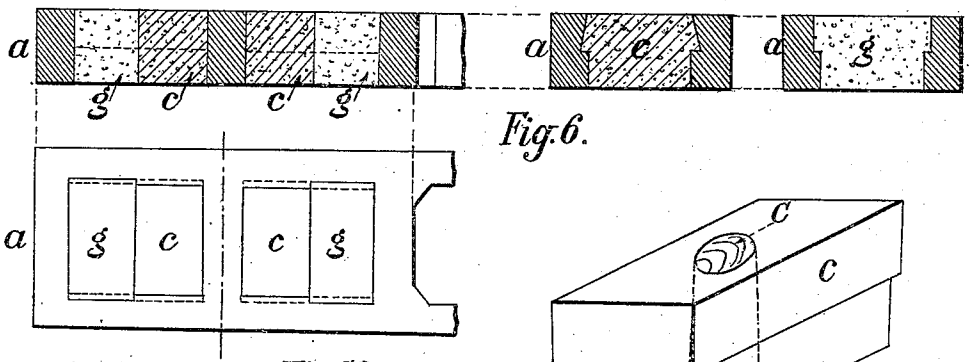


Fig.6.

Fig.13.

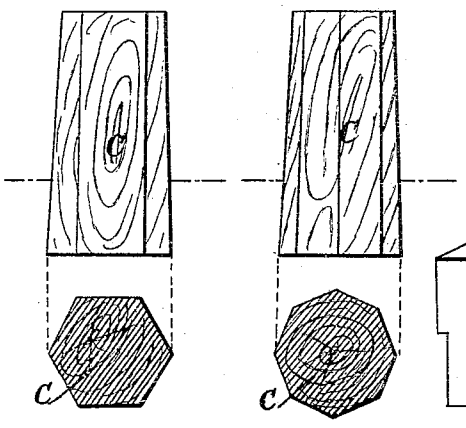


Fig.12.

Fig.10.

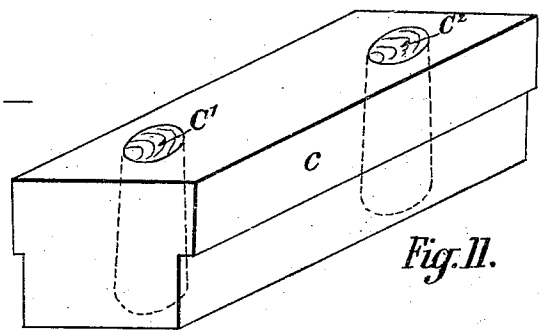


Fig.11.

Witnesses

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UNITED STATES PATENT OFFICE.

GASTON LIEBEAUX, OF NANTES, AND FRANÇOIS HENNEBIQUE, OF PARIS, FRANCE.

BLOCK FOR RECEIVING RAIL-FIXING DEVICES IN REINFORCED-CONCRETE SLEEPERS.

932,300. Specification of Letters Patent. Patented Aug. 24, 1909.

Application filed June 27, 1908. Serial No. 440,742.

To all whom it may concern:

Be it known that we, GASTON LIEBEAUX and FRANÇOIS HENNEBIQUE, citizens of the Republic of France, residing at Nantes and Paris, respectively, both in the Republic of France, have invented certain new and useful Improvements in Blocks for Receiving Rail-Fixing Devices in Reinforced-Concrete Sleepers.

In our previous patent application, dated May 6th, 1907, Serial No. 372,078, systems of reinforced concrete sleepers for railways were described, one of the characteristics of which consists in the insertion in the interior of cells formed in the heads of each sleeper, of one or more removable wood blocks. These wood blocks being retained in their positions by suitable means (wedges, keys, spikes or bolts) serve for the fixing of the rails by the ordinary methods.

The invention which will now be hereinafter described consists in arrangements for securing the blocks in the interior of the cells of the heads of the sleepers with a view to dispensing with wedges, spikes and the like, or any other analogous means of fixing, and in the production of blocks intended to be substituted for the wood blocks mentioned in the previous application, the use of which has certain drawbacks, due principally to variations of temperature as well as alternations of dryness and moisture.

In the accompanying drawings:—Figure 1 is a longitudinal section of a sleeper head with removable blocks retained in place without wedges or spikes; Fig. 2 is a corresponding horizontal plan; Fig. 3 is a transverse section on the line 2—2 of Fig. 2; Figs. 4, 5 and 6 are respectively three modifications of the arrangement of Figs. 1, 2 and 3, in longitudinal section, plan view and transverse sections through the movable block serving for the fixing of the rail and through the adjacent block forming a key; Figs. 7, 8 and 9 show respectively, in a similar way, a longitudinal section, a horizontal plan, and a transverse section of an arrangement yielding the same result without the use of keys; Figs. 7^A and 9^A are sectional views, the former a longitudinal, and the latter a transverse section, for making the construction referred to, clearer. Figs. 10 to 14 relate to the manufacture of the blocks intended for receiving the means for fixing the rails.

In these figures the same letters indicate the same parts or the same devices.

In the arrangement in Figs. 1–3 the blocks c intended to receive the devices for fixing the rails are held in position simply by keys g of cement or any other suitable material, a block c and a key g being juxtaposed in each cell or slot formed in one of the heads a of the sleeper. The block c and the adjacent key g bear downward on two shoulders h suitably reserved in the interior of the cell, and to the form of which they adapt themselves; further the block c is provided with a projecting part c^x at the lower part of the face opposite to that in contact with the key g. This projection c^x lodges in a recess reserved for this purpose in the sleeper, under a shoulder h' when the block c is inserted. The faces of the block c and of the key g which are in contact follow an inclined plane $p\ p$ and a plane $p'\ p'$ of similar inclination is found on the opposite face of the key g in contact with the sleeper.

It is evident that if a cell is provided with its block c and its key g as shown in the drawings, any stress may be exerted on the block c which receives the rail fixing device, without its being possible for it to be drawn out of its position. It is, however, easy to change this block, by first removing the key g and then causing the block c to slip into its place, which block may then in its turn be raised vertically. By an inverse operation the block c and the key g are also equally easily put in position. It is important to remark that the obliquity of the two faces of the key g and of one face of the block c according to the planes $p\ p$ and $p'\ p'$ is not indispensable, but these faces may also be vertical. Similarly the form of the shoulders $h'\ h'$ may vary. Inclined planes suitably directed might even be substituted for these projections.

As an example Figs. 4, 5 and 6 represent constructive modifications which, however, alter nothing in the nature of the invention. In these modifications the blocks c and the keys g are put in place and withdrawn from their cell in the same way as in the arrangement shown in Figs. 1–3.

With the arrangement shown in Figs. 7, 8

and 9 the result indicated hereinbefore is obtained without the use of the key *g*. In order to attain this object the blocks *c* have two of their faces parallel and directed along planes *q q* and *q' q'* oblique relative to the bases; these blocks are lodged naturally in cells of the same form with shoulders or ledges *h*. It is evident that with such an arrangement of the rail fixing device, for instance, a treenail engaging over the flange of the rail and exerting on the block *c* an approximately vertical pressure, it is impossible to cause the said block to emerge from its location in this way, because in order to operate this emergence the block *c* must necessarily be caused to slide in a direction parallel to its edges which would involve a displacement not only of the treenail but also of the rail. By combining the action of two blocks *c* arranged opposite one another on each side of the rail as is shown in the drawings, a much more perfect result is attained. Naturally the faces of the block *c* directed along the planes *q* and *q'* are not necessarily the longitudinal faces, as the same object would be attained by directing obliquely the lateral faces. The same result would be also obtained by giving to the said block the form of an oblique prism.

By referring to Figs. 7, 8, 9, it may be seen that the blocks have respectively two of their faces *q q* and *q' q'*, inclined in parallel planes, but directed inversely in each block. These inclined faces are visible in the longitudinal section in Fig. 7. But instead of giving the faces the inclinations shown, the same result may be obtained by inclining the lateral faces of the blocks, thereby constituting a modification.

The form of the blocks *c* such as shown in the drawings, is not absolutely fixed, but this form is capable of numerous modifications adapted to present the characteristics hereinbefore set forth. The blocks *c* may be of wood, but it is possible to make them in such a way that differences of temperature, humidity or dryness have no influence on them. Thus blocks little sensitive to changes of temperature are obtained by forming these blocks by means of strips of wood of variable and suitable thickness, caused to adhere one to the other, care being taken to cross the fibers. Blocks fulfilling the requirements hereinbefore mentioned may also be obtained by molding these blocks of cement beton, reinforced or otherwise, or of any other composition adapted to yield the same result. It is possible to arrange these blocks in such a way that they behave in practice as regards the fixing of the rails exactly like wood blocks. In order to attain this object, the block of cement is combined with one or more pieces or plugs of wood of small dimensions and of cylindrical or truncated conical form, having at their upper part a section sufficient to receive the chairs at the necessary distance apart. The pieces of wood are inserted at the moment of molding the beton in the exact places where the treenails or other rail fixing devices are to penetrate.

In the accompanying drawings:—Fig. 10 shows a view in perspective of a block *c* of cement beton or other composition, in the interior of which a conical plug C is retained; Fig. 11 shows in the same way a block *c* provided with two plugs C' C^2. The blocks *c* being engaged and fixed in one of the cells formed in a sleeper of reinforced cement beton, the plugs C must be at a suitable place for receiving the rail fixing device.

It has been hereinbefore stated that the plugs C are cylindrical or truncated conical but of course the truncated conical form would be preferable, because its form itself then is opposed to any vertical displacement of the said plugs or pegs.

Figs. 12, 13 and 14 represent in front view and horizontal section several truncated conical plugs C. Some, Figs. 12 and 13, are of polygonal section, the effect of which is to avoid any rotary movement of the plugs after having been inserted. As regards the plug shown in Fig. 14, which is of circular section, any rotary motion is also avoided by employing a notch *o* formed at a suitable point in the height of the plug, and which is filled with cement beton at the moment of making the block *c*. Of course two or more notches *o* may if desired be formed on a plug C. It is interesting to remark that the use of like notches with cylindrical plugs and plugs of circular or prismatic section, also prevents any vertical displacement of these plugs in their blocks *c*. The wood plugs C are cut out from blocks of wood so as to present their fibers either horizontally or vertically, after being inclosed in a block of cement *c*, the direction of the said fibers in one or other of the said directions being capable of being utilized according to the directions of pressure. Finally these blocks may also be cut out of blocks formed of strips of wood stuck together and with fibers reversed. The blocks *c* provided with one or more plugs C may be employed in all sleepers of reinforced concrete or cement beton provided with blocks of wood, whatever may be the system.

We declare that what we claim is:—

1. A sleeper having cells formed therein, removable blocks fitting in said cells, interlocking projecting parts on the walls of said cells and said blocks preventing vertical displacement of said blocks, and removable key pieces inserted in said cells and preventing lateral displacement of said blocks substantially as described.

2. The combination of a rail, a sleeper under said rail, and having a recess extending from under said rail to one side thereof, a rail supporting block in said recess and under said rail, a key also in said recess and bearing against said block, said recess being of a size to permit the key and block to be removed from said sleeper without removing said rail.

In witness whereof, we have hereunto signed our names this 15 day of June 1908, in the presence of two subscribing witnesses.

GASTON LIEBEAUX.
FRANÇOIS HENNEBIQUE.

Witnesses:
H. C. COXE,
ALPHONSE MÉJEAN.