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- [54] Title: PROCESS FOR PRODUCING CONCRETE RAILWAY CROSS-SLEEPERS
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- | | | | |
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(see abstract next page)

BAD ORIGINAL



"PROCESS FOR PRODUCING CONCRETE RAILWAY CROSS-SLEEPERS
AND ELEMENTS USED FOR THIS PROCESS".

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Abstract of the disclosure:

The invention pertains to a process for producing concrete cross-sleepers, said process comprising substantially locating two elements of a rail clamping device through openings provided in the casting mould;
5 securing said elements; locating the upper reinforcement on supports for said elements and, if desired, locating an intermediate reinforcement; disposing a connection rod and pouring concrete, the lower reinforcement being applied at a suitable time and the assembly being subjected
10 to a vibrating operation. This invention relates also to the elements used for this process.

This invention relates to a process for producing cross-sleepers made of reinforced concrete for railways,
15 as well as the elements used for this process.

More particularly, this invention relates also to a process for producing concrete cross-sleepers wherein one part of a combined clamping device for the rails (e.g. of the type as described in the Belgian Patent
20 No. 882.165 of the Applicant) is embedded in said cross-sleepers.

It is known that cross-sleepers of reinforced concrete are produced by using a casting mould in which the above-mentioned parts of the concerned clamping
25 device are disposed and suitably located, at least the upper reinforcement of said sleeper being then disposed in the bottom of said mould, said reinforcement being retained by using temporary supports which are disposed

transversally in the mould through the wall thereof and which are removed only during the vibrating of the concrete mass and even during the last stage of said vibrating, so that, on the one hand, the said reinforcement is maintained at the suitable level and, on the other hand, the spaces formed by said supports are filled up at the end of the vibrating operation.

It is apparent that such device and process are not only tedious, but also expensive.

In addition, it has been also attempted to get round the difficulties of said process by locating simple spacing elements in the bottom of the mould for the above-mentioned reinforcement in any material as it is usually the case namely in the road construction. However, as a result, when the cross-sleeper is finished, said spacing elements are disadvantageously visible and, in some cases, they allow a water infiltration down to the reinforcement material, thereby resulting in rust formation reducing progressively the resistance of the cross-sleeper, which is not tolerable.

The present invention relates to a process and an apparatus allowing to prevent the drawbacks of the known processes and apparatuses. For this purpose, the process according to the invention comprises substantially locating two parts or elements of a rail clamping device through openings provided in the bottom of a casting mould; suitably securing said elements outside the mould; locating the upper reinforcement of the cross-sleeper on supports provided therefor on the said elements; locating, if desired, an intermediate reinforcement on the upper reinforcement; passing a connection rod through an opening provided in the wall of the mould; and fil-

ling up the mould by pouring concrete therein, the lower reinforcement being then conventionally disposed at a suitable time and the assembly being then subjected to a vibrating operation.

5 According to this invention, the elements used for this process and consisting substantially of the stationary portions embedded in the concrete mass and forming part of the rail clamping device proper are provided with at least two supports for the upper reinforcement of the cross-sleeper.

10 The characteristics of the invention will be more apparent from a preferred embodiment of the elements according to the invention, said embodiment being described hereafter only by way of example and without any limitation, reference being made to the enclosed drawings in which :

 Figure 1 is a vertical longitudinal cross-section through a mould used for carrying out the process according to the invention;

20 Figure 2 is a cross-section taken on the line II-II of Figure 1;

 Figure 3 is a view similar to that of Figure 1, but after having located the upper reinforcement of the cross-sleeper and an intermediate reinforcement in the mould;

25 Figure 4 is a cross-section taken on the line IV-IV of Figure 3;

 Figures 5 and 6 are respectively a front view and a side view of an element according to the invention;

30 Figure 7 is a side view of one end of a concrete cross-sleeper obtained by the process and with the elements according to the invention;

Figure 8 is a cross-section taken on the line VIII-VIII of Figure 7.

Figure 1 shows a mould 1 in the bottom of which are provided openings 2 and 3 respectively in which the parts 4 of the lowermost elements 5 of a rail clamping device may be suitably disposed, said parts 4 projecting normally from the cross-sleeper.

Said elements 5 are provided with a flange 6 so that they may be very readily maintained in the above-mentioned openings 2, 3.

Said elements are accessorially maintained outside the mould 1 in a conventional manner (not shown).

Then, the upper reinforcement 7 of a cross-sleeper being produced is introduced in the mould 1, said reinforcement being located on a support 8 or 9 of each element 5, so that said reinforcement is automatically located and maintained at a suitable distance relative to the bottom of the mould 1.

According to the present invention, each element 5 is provided not only with the supports 8, 9, but also with inner accessory supports 10, 11; either the supports 8, 9 (as in the illustrated example) or the supports 10, 11 being used for locating a reinforcement according to the type of cross-sleeper or according to the type of reinforcement which is used or required.

Then, on said reinforcement 7, is disposed a coiled reinforcement or similar 12 through which extends a connection rod 13 via an opening 14 provided in the concerned side wall of the mould 1, said connection rod being provided for connecting two parts as provided in the mould 1 at a suitable distance relative to each other.

It is then possible to readily pour concrete into

the mould 1, while suitably vibrating it, a lower reinforcement 15 provided as known per se being then disposed in the mould 1 at the end of the operation.

5 It is apparent that a simple process and a simple moulding device are thereby obtained, the upper reinforcement 7 being maintained with a high reliability and in ideal circumstances at a suitable distance from the bottom of the mould by using elements forming part of the rail clamping device and provided with suitable
10 supporting locations for the reinforcement.

Figures 5 and 6 show a preferred embodiment of the elements 5 and, in these figures, it is apparent that the supports 8, 9, 10 and 11 are formed by suitable notches 16, 17 and 18, 19 respectively in which the
15 reinforcement may be, in a manner, applied, so that said reinforcement is not only supported, but also secured against any motion, thereby preventing any shifting of said reinforcement in any condition.

Finally, figures 7 and 8 show an embodiment of a
20 cross-sleeper obtained by the process and with the elements according to the invention, more particularly with the elements as shown in figures 5 and 6.

The present invention is not at all limited to the embodiment described by way of example and represented in the enclosed drawings, but such cross-sleepers obtained by the process according to the invention
25 and with the elements used in said process may be made in any shape and dimension without departing from the scope of the invention.

WHAT WE CLAIM IS:

1. Process for producing railway cross-sleepers, characterized in that it comprises the steps of:

5 locating two elements of a rail clamping device through openings provided in the bottom of a casting mould,
suitably securing said elements outside the
10 mould;
 locating an upper reinforcement of the cross-sleeper on supports provided therefore on the said elements,
 passing a connection rod through an opening
 provided in the wall of the mould and filling up the mould by pouring concrete therein, and
15 conventionally disposing the lower reinforcement at a suitable time and subjecting the assembly then to a vibrating operation.

20 2. Process according to Claim 1, characterized by the step of locating an intermediate reinforcement on the upper reinforcement.

25 3. Process according to Claim 1 or 2, charac-

terized in that said elements are provided, on the embedded portion thereof, with at least two supports for the said upper reinforcement of the cross-sleeper.

5 4. Process according to Claim 3, characterized in that the embedded portion of said elements is U-shaped, the opposite external sides of the legs of said U-shaped being each provided with the said support.

10 5. Process according to Claim 3, characterized in that the embedded portion of the said elements is U-shaped, the opposite internal sides of the legs of said U-shaped being each provided with the said support.

15 6. Process according to Claim 3, characterized in that the embedded portion of the said elements is U-shaped, the opposite external and internal sides of the legs of said U-shaped being each provided with the said support.

20 7. Process according to Claim 6, characterized in that the supports provided on the external side of the legs are located at a level different from that of the supports provided on the internal side of said legs.

8. Process according to any of claims 3 to 7, characterized in that the said supports are each formed by a local enlargement of the legs of the element.

9. Process according to any of Claims 3 to 7, characterized in that the said supports are each formed by a notch or a recess provided in the legs of the elements.

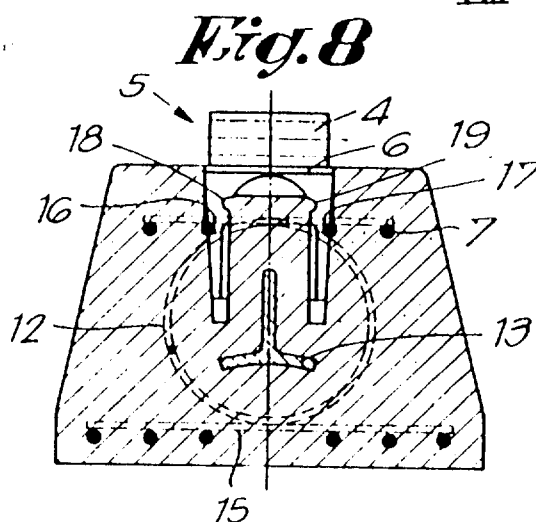
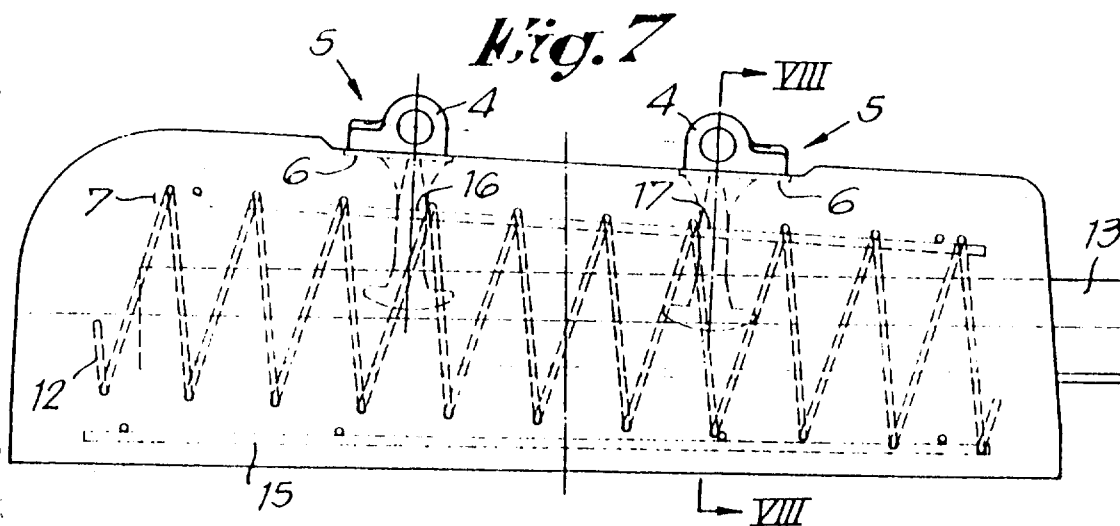
10. Process according to Claim 9, characterized in that the said notch or recess is half-cylindrical.

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Fig. 3

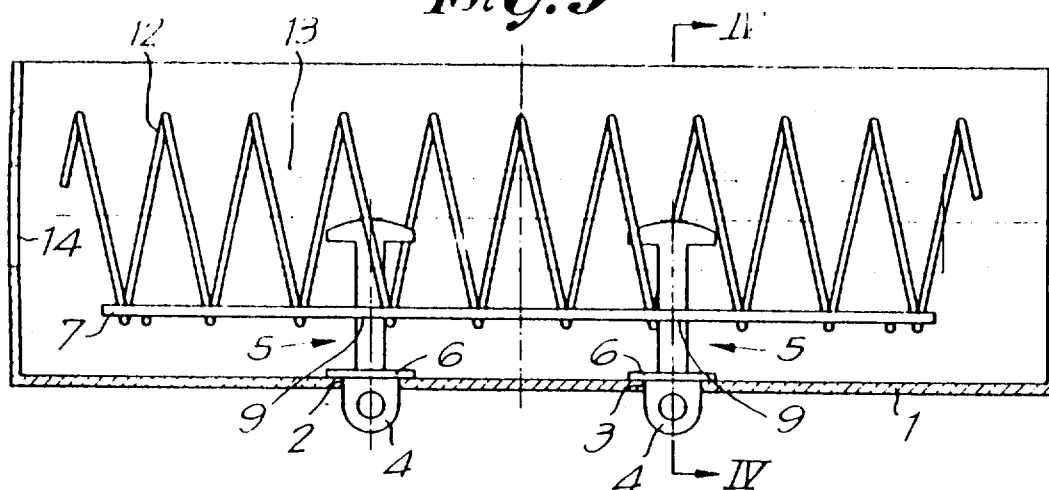


Fig. 5

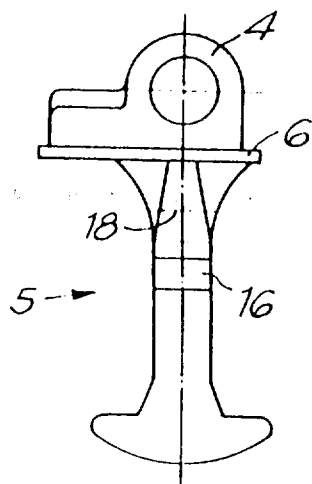
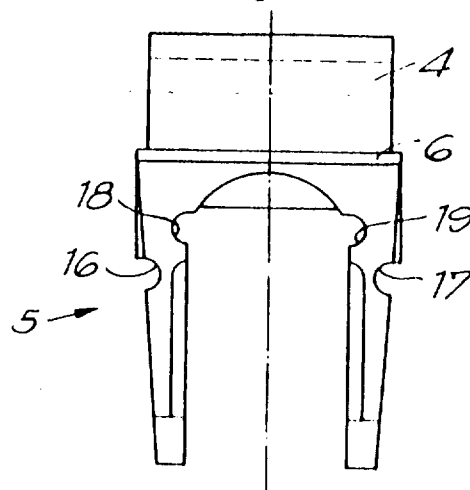


Fig. 6



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Fig. 1

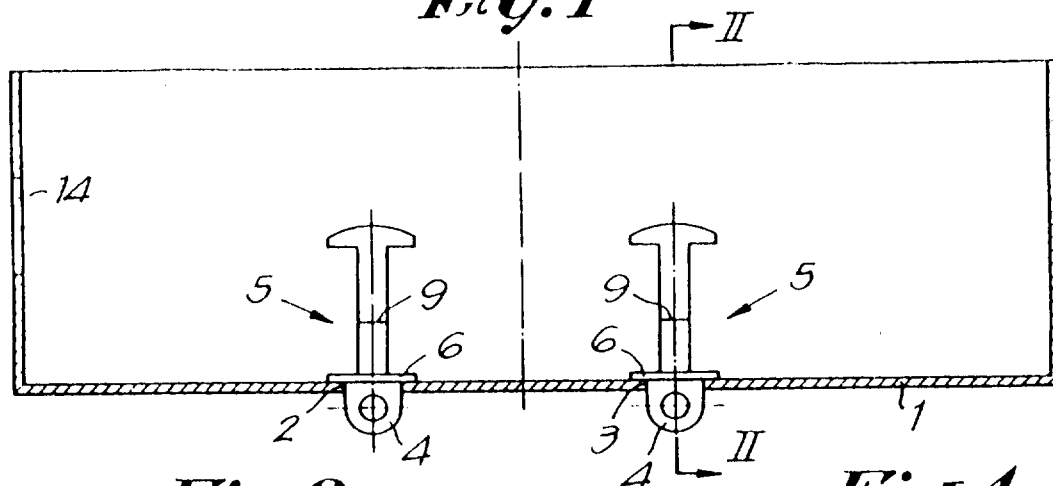


Fig. 2

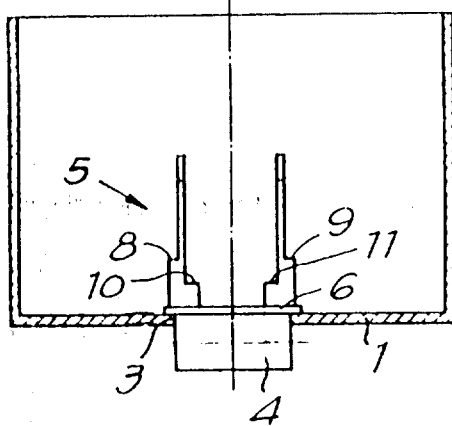
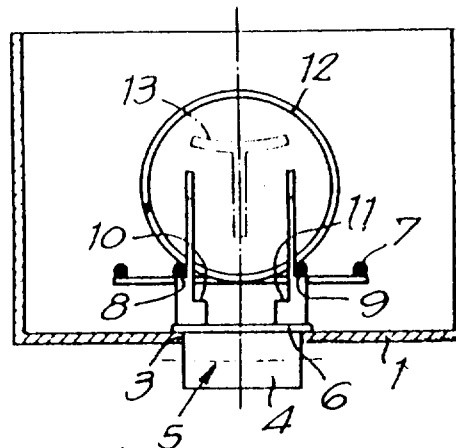


Fig. 4



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