

United States Patent

[11] 3,552,647

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[21] Appl. No. 738,610
[22] Filed June 20, 1968
[45] Patented Jan. 5, 1971
[32] Priority July 12, 1967
[33] Austria
[31] No. 6534/67

[54] TEMPORARY RAIL JOINT
7 Claims, 4 Drawing Figs.

[52] U.S. Cl. 238/243, 104/2
[51] Int. Cl. E01b 11/00
[50] Field of Search 238/243,
244, 173, 218, 227—229, 148, 151, 152, 171;
104/2

[56]

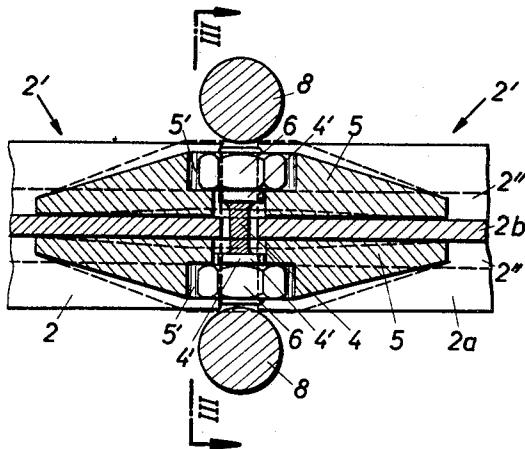
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ABSTRACT: Two rail ends are temporarily interconnected by two clamping members extending along the webs of the rail ends by bridging the rail ends to hold the webs clamped therebetween. The two clamping members are centrally anchored on a spacing member positioned between the rail ends.



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FIG. 1

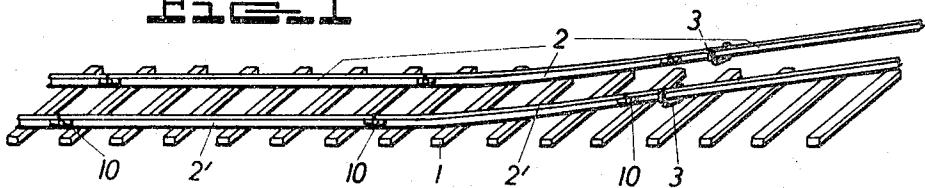


FIG. 2

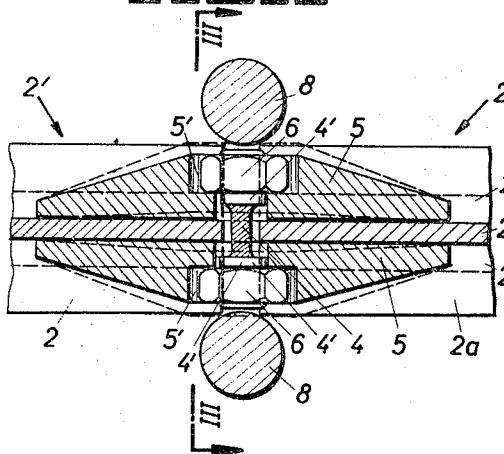


FIG. 3

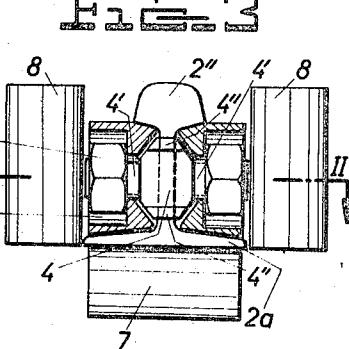
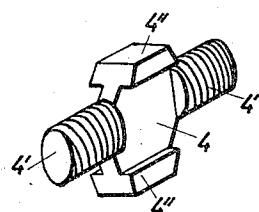


FIG. 4



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TEMPORARY RAIL JOINT

BACKGROUND AND SUMMARY OF THE INVENTION

The present invention relates to a temporary joint for rapidly connecting and disconnecting two adjacent rail ends. Such joints are particularly useful in the continuous replacement of track rails, and may be most advantageously used in such operations where it is desired to weld the track sections into a continuous length of rail after the rails have been laid.

This accomplished in accordance with this invention with a joint including a spacing member positioned between the two rail ends and two clamping members extending along the webs of the two rail ends and bridging the rail ends to hold the webs clamped therebetween. The spacing member defines a distance between the two adjacent rail ends corresponding to the spacing required for welding the two rail ends together.

However, if no such spacing is desired, to the two clamping members may be interconnected according to the invention by a simple connecting member positioned between the two rail ends.

The spacing member advantageously serves to anchor the clamping members at opposite sides of the rail webs, thus serving the double purpose of spacing and anchoring.

According to one preferred feature, the clamping force of the clamping members may be suitably selected by constructing these members as resilient elongated elements which are centrally anchored to the spacing member and are so shaped that only their ends contact the rail webs until they are resiliently deformed when centrally anchored to the spacing member. This clamping force should be sufficient to absorb tensile and pressure forces exerted by the rails during replacement operations, i.e. when they are lifted off the ties or placed thereonto, without sliding of the clamping members relative to the rail ends.

BRIEF DESCRIPTION OF DRAWING

The above and other objects, advantages and features of the present invention will become more apparent in the following detailed description of a preferred embodiment thereof, taken in conjunction with the accompanying drawing wherein:

FIG. 1 is a perspective view of a newly laid track section at the point of track replacement, in which connection this invention is useful;

FIG. 2 shows a temporary joint according to the invention in a section taken along line II-II of FIG. 3;

FIG. 3 is a section along line III-III of FIG. 2; and

FIG. 4 is a perspective view of a preferred spacing member according to the present invention.

DETAILED DESCRIPTION

Referring now to the drawing and first to FIG. 1, there is shown a track section at the point of replacement where the old track is taken up and a new track is laid according to the continuous track renewal method fully disclosed and claimed in our copending application Ser. No. 738,475, filed June 20, 1968, now U.S. Pat. No. 3,521,565, entitled "Method and Apparatus for Replacing an Old Track by a New Track."

While the temporary joint of this invention may be used wherever it is desired temporarily to connect two adjacent rail ends, it is particularly used and will be described herein in connection with a track renewal method and apparatus wherein the old track rails are lifted off the ties and new track rails are laid on the ties in a continuous operation with the lifted and newly laid track rail ends remaining connected to the old and new rails, respectively, and the continuous lengths of rails are guided on rollers during the renewal operation.

As shown in FIG. 1, the track rails 2, which are to be taken off the ties 1 or are to be laid on them, consist of discontinuous rail sections 2'. The rail sections are temporarily connected by joints 10 to form continuous rails 2 which may be guided on guides 3 during the replacement operation, as fully described in the aforementioned copending application.

The joint 10 is fully shown in FIGS. 2-4. It consists of a spacing member 4 positioned between two adjacent rail ends of rails sections 2', and two like clamping members 5, 5 extending along the webs 2b of the rail ends and bridging the rail ends to hold the webs clamped therebetween, as best shown in FIG. 2. The clamping members are elongated resilient elements shaped so that only their ends contact the rail webs until resiliently deformed when anchored to the spacing member, the original position and shape of the clamping members being shown in broken lines in FIG. 2.

The clamping members 5, 5 are anchored to spacing member 4 at opposite sides of rail webs 2b, 2b between rail base 2a and rail head 2''. In the illustrated embodiment, this is effectuated by means of a spacing member comprising two threaded stub shafts 4', 4' projecting beyond the opposite sides of the webs of the longitudinally aligned rail ends, the clamping members defining centrally located holes registering with a respective one of the stub shafts, the clamping members being mounted on the stub shafts, and threaded nut 6, 6 being screwed over the clamping members on the stub shafts to deform the resilient clamping members into the position shown in full lines in FIG. 2 whereby the two rail ends are securely clamped together with the entire length of the clamping members engaging the rail webs.

While such anchoring means are most effective and readily assembled and dismantled, other mechanical connections between a spacing member and a pair of clamping members may be used, such as bayonet or snap joints. It is also within the scope of the present invention to use, for instance, a pair of magnetic clamping members which are magnetically attracted to each other and/or to the rail webs so as to hold the rail ends clamped therebetween without anchoring the two clamping members to an anchoring member. It would also be possible to make the spacing member integral with one of the clamping members so that only one temporary connection is required.

The spacing member will advantageously be so dimensioned that it defines a distance between the two adjacent rail ends abutting thereagainst, which corresponds to the spacing required for welding the two rail ends together after the rails have been permanently placed.

As indicated in FIG. 3, the guides 3 which are used in such track renewal apparatus as described in our above-mentioned copending application may consist of guide rollers 7, 8, 8, the rollers 7 supporting the rail base 2a while the pair of lateral rollers 8, 8 form a trough with roller 7, wherein the rail is nestled for guiding support. To make such guidance possible while the rail sections 2' are connected only by the temporary joints 10 of this invention, the spacing and clamping members are so dimensioned as not to extend laterally beyond the bases of the rail ends, and seen in FIG. 3. In this manner, the temporary joint do not interfere with the rail guidance and support system during track renewal operations.

For this purpose, it is useful if the anchoring nuts 6, 6 are housed within the countersunk recesses 5', 5' of the clamping members and do not extend therebeyond when the clamping members have been tightly screwed onto the stub shafts 4', 4' of the spacing member.

As best shown in FIG. 4, the preferred spacing member of the joint of the present invention comprises a web extending transversely of the webs 2b of the rail ends and two end bars 4'', 4'' abutting the 2b, the spacing member web and end bars defining two center recesses facing a respective rail end. The width of the end bars 4'', 4'', which determines the distance between the rail ends, corresponds to the desired spacing required for later welding the two rail ends together. Spacing members having end bars of different widths may be used, depending, for instance, on the temperature at the time the rails are laid.

Providing the two end bars on the spacing member has the advantage that the webs of the rail ends abut only against the spaced ends of the spacing member rather than pressing against the entire face thereof. The resultant pressure distribution is advantageous in transmitting the pressure from one rail

end to the other, in addition to which such a spacing member may be more readily dismantled even if the abutting rail ends exert considerable pressure thereagainst.

As shown in FIGS. 3 and 4, the web of the I-shaped spacing member 4 is wider than the rail webs 2b and tapers inwardly towards with ends which carry the end bars 4", 4". This makes the spacing member stronger and more resistant to the loads to which it is subjected, as well as more yielding to pressure.

If no spacing between the adjacent rail ends is desired, for instance, if the rail sections are not to be welded together after they are laid but are bolted down on the ties separately, the spacing member could be replaced by a simple connecting member between the pair of clamping member, such as would be provided, for instance, by the web and stub shafts of spacing member 4 without its end bars 4".

I claim:

1. A temporary joint for connecting two adjacent rail ends of rails comprising a base and a web, said joint including a spacing member positioned between the two rail ends and defining a distance between the two adjacent rail ends corresponding to a spacing required for welding the two rail ends together, the spacing member comprising two threaded stub shafts projecting beyond the opposite sides of the rail webs, two clamping members extending along the webs of the two rail ends and bridging the rail ends to hold the webs clamped therebetween, the clamping members defining holes registering with a respective one of the stub shafts, the rail ends abutting the spacing member, the spacing and clamping members not extending beyond the bases of the rail ends, and threaded nuts screwed over the clamping members on the stub shafts to anchor the clamping members to the spacing member at opposite sides of the webs.

2. The temporary joint of claim 1, wherein the clamping members are resilient elongated elements centrally anchored to the spacing member, said resilient elements being shaped so that only their ends contact the rail webs until resiliently deformed when centrally anchored to the spacing member.

3. A temporary joint for connecting two adjacent rail ends of rails comprising a base and a web, said joint including a spacing member positioned between the two rail ends and defining a distance between the two adjacent rail ends corresponding to a spacing required for welding the two rail ends

4. The temporary joint of claim 3, wherein the spacing member comprises two threaded stub shafts projecting beyond the opposite sides of the rail web, the clamping members define holes and countersunk recesses registering with a respective one of the stub shafts to anchor the clamping members to the spacing member, the threaded nuts being housed within the recesses and not extending therebeyond, and the stub shafts of the spacing member and the clamping members not extending laterally beyond the bases of the rail ends.

5. The temporary joint of claim 3, wherein the clamping members are resilient elongated elements centrally anchored to the spacing member, said resilient elements being shaped so that only their ends contact the rail webs until resiliently deformed when centrally anchored to the spacing member.

6. A temporary joint for connecting two adjacent rail ends of rails comprising a base and a web, said joint including a spacing member positioned between the two rail ends and defining a distance between the two adjacent rail ends corresponding to a spacing required for welding the two rail ends together, the spacing member comprising two end bars abutting the webs of the rail ends and the end bars defining two center recesses facing a respective rail end, two clamping members extending along the webs of the two rail ends and bridging the rail ends to hold the webs clamped therebetween, the rail ends abutting the spacing member, the spacing member anchoring said clamping members to opposite sides of the webs, and the spacing and clamping members not extending beyond the bases of the rail ends.

7. The temporary joint of claim 6, wherein the spacing member comprises a web extending transversely of the webs of the rail ends and being wider than the rail webs, the spacing member web tapering inwardly towards both ends, said spacing member ends carrying said end bars, and the center recesses being defined by the spacing member web and end bars.

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