Nov. 21, 1939. L. HUGHES ET AL 2,181,018

EXPANSION JOINT

Filed May 25, 1938

Fig. 1.

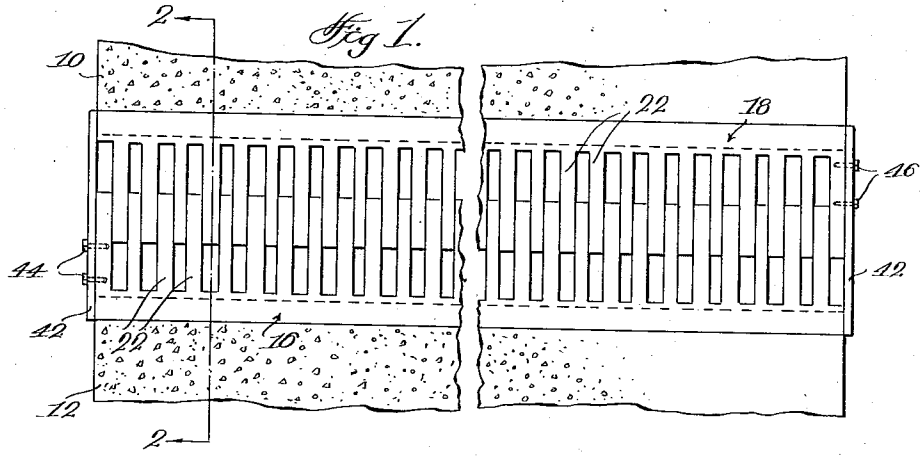


Fig. 2.

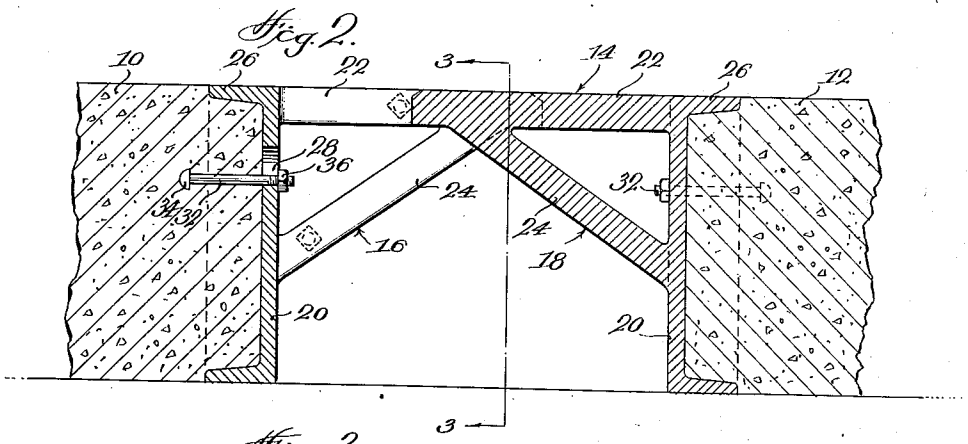
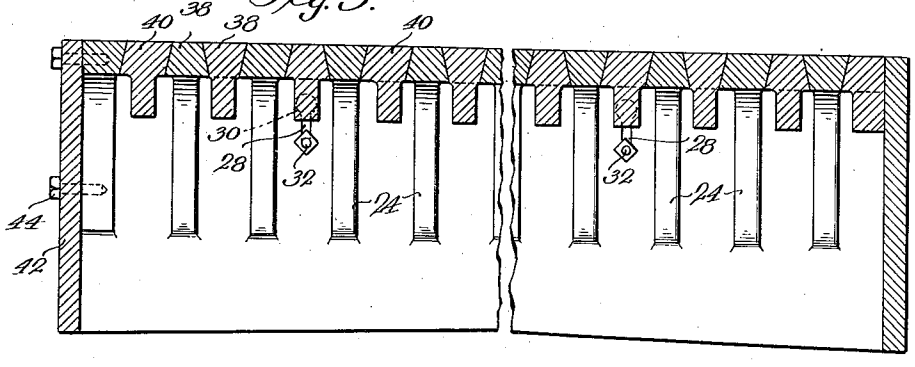


Fig. 3.



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EXPANSION JOINT

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Blandinsville, Ill.

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3 Claims. (Cl. 94—18)

Our invention relates to concrete roadbeds and the like and includes among its objects and advantages the provision of an improved joint designed to compensate expansion and contraction of the roadbed.

In the accompanying drawing:

Fig. 1 is a plan view of a roadbed showing our invention applied thereto;

Fig. 2 is a sectional view along the line 2—2 of Fig. 1; and

Fig. 3 is a sectional view along the line 3—3 of Fig. 2.

In the embodiment selected to illustrate our invention, we make use of roadbed sections 10 and 12 which may comprise concrete and between which we position our expansion joint 14. The joint 14 comprises units 16 and 18, each of which includes a channel 20 having a length coextensive with the width of the roadbed. Each channel carries a plurality of fingers 22 which is cast integrally with its respective channel. Referring to Fig. 1, it will be noted that the fingers of one channel are alternately positioned between the fingers of the other channel. Diagonal braces 24 are cast integrally with all the fingers of each channel and the bight of that channel. Thus, the joint comprises two principal parts, each of which is cast as an integral unit. We prefer to employ malleable cast iron which is suitable for load carrying purposes and of sufficient strength to resist breaking.

Fig. 2 illustrates the upper surfaces of the fingers 22 as lying in a common plane, which surfaces also lie in a common plane with the outer surfaces of the flanges 26 which, in turn, lie flush with the roadbed sections 10 and 12. Fig. 2 illustrates the overlapping relation between the two sets of fingers 22, which overlapping relation extends partly throughout the total length of the fingers so as to accommodate considerable expansion and contraction while still maintaining overlapping relation between the fingers. Each channel 20 is provided with a plurality of slots 28 terminating in enlarged openings 30. Anchor bolts 32 lie in the slots 28 and have heads 34 embedded in the concrete sections of the roadbed. The bolts may be provided with nuts 36 having pressure relation with their respective channel for anchoring that channel to its respective section.

The enlarged openings 30 are of such diameter as to freely receive the bolt heads or nuts to permit assembly of the bolts with the channels after being laid in position. The bolts are then lowered into the bottom ends of the slots, and the concrete poured. After setting of the concrete, the units 16 and 18 are effectively anchored to their respective roadbed sections.

In Fig. 3, we illustrate some of the fingers 22 as being keystone shaped in cross section, as at 38, and reversed in such manner as to resist relative vertical shifting. At the same time, some of the fingers 22 take the form of parallelograms in cross section, as at 40, which permits grouping of two keystone fingers between two parallelogram fingers so as to provide an arrangement in which relative vertical movement is resisted throughout the entire overlapping area of the fingers.

End plates 42 are positioned across the ends of the units 16 and 18. One end plate 42 is connected with the unit 16 by bolts 44, which bolts are threaded into the outer diagonal brace 24 adjacent the plate. The other plate 42 is connected with the unit 18 by screws 46 threaded into the diagonal brace 24 adjacent that plate. Thus, the plates provide complete closure for the ends of the assembled units while at the same time permitting expansion and contraction thereof. These plates may be removed to lend accessibility for removing any material which might accumulate underneath the joint.

Our joint embodies a simple construction but one in which the upper surface is so designed as to provide a smooth load carrying surface. At the same time, the joint is made up of relatively few parts which are effectively anchored in the concrete road sections. The fingers 22 are capable of withstanding relatively heavy loads because of the diagonal braces 24 and because of the interfitting relation between the fingers.

Without further elaboration, the foregoing will so fully explain my invention that others may, by applying current knowledge, readily adapt the same for use under various conditions of service.

We claim:

1. In an expansion joint, a pair of units each including spaced fingers, the fingers of one unit being arranged in interfitting relation with the fingers of the other unit, said fingers having flat angular contacting relation so arranged as to restrain the fingers from relative vertical movement.

2. In an expansion joint, a pair of units each including spaced fingers, the fingers of one unit being arranged in interfitting relation with the fingers of the other unit, said fingers having flat angular contacting relation so arranged as to restrain the fingers from relative vertical move-

ment, but permitting relative longitudinal movement.

3. In a concrete roadbed including spaced sections, an expansion joint positioned between said sections, said expansion joint comprising two units and each unit having a means anchored to one section of the roadbed, a set of horizontal fingers carried by each of said means, with the fingers interfitting and disposed longitudinally of the roadbed, said fingers having flat side faces and the side faces of one set of fingers fitting snugly with respect to the same faces of the other set of fingers, said side faces being angled with respect to the vertical in such manner as to restrain one set of fingers from relative vertical movement with respect to the other set, but permitting relative movement longitudinally of the roadbed, and brace means extending from the free ends of the fingers in each set to the said means of that set, said brace means being fashioned to have overlapping relation to permit free relative movement between the fingers longitudinally of the roadbed.

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