

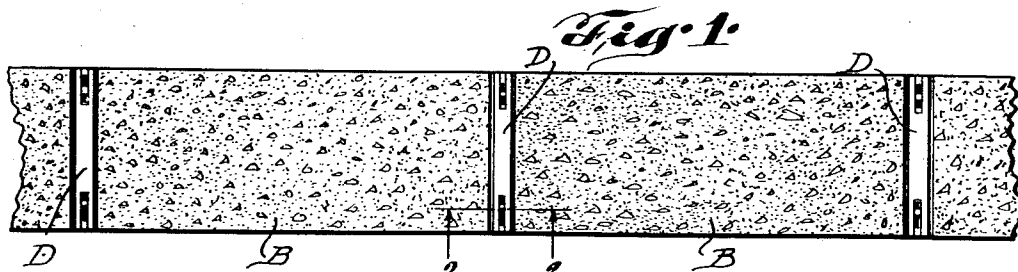
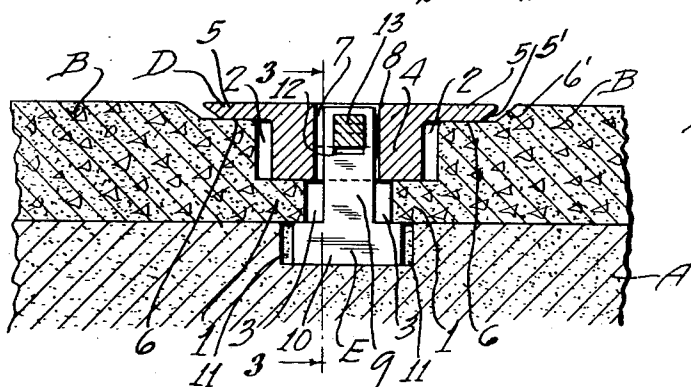
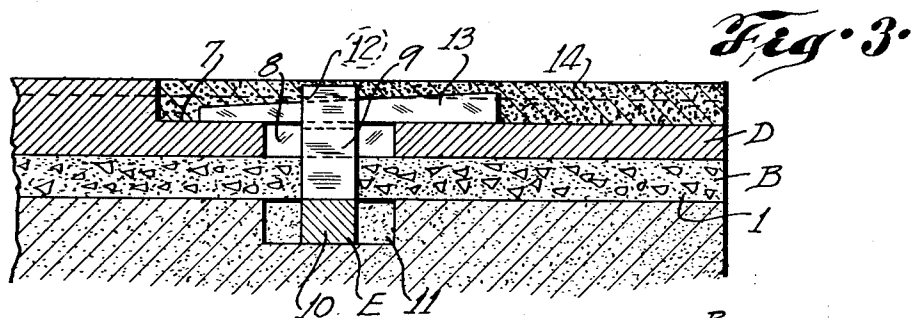
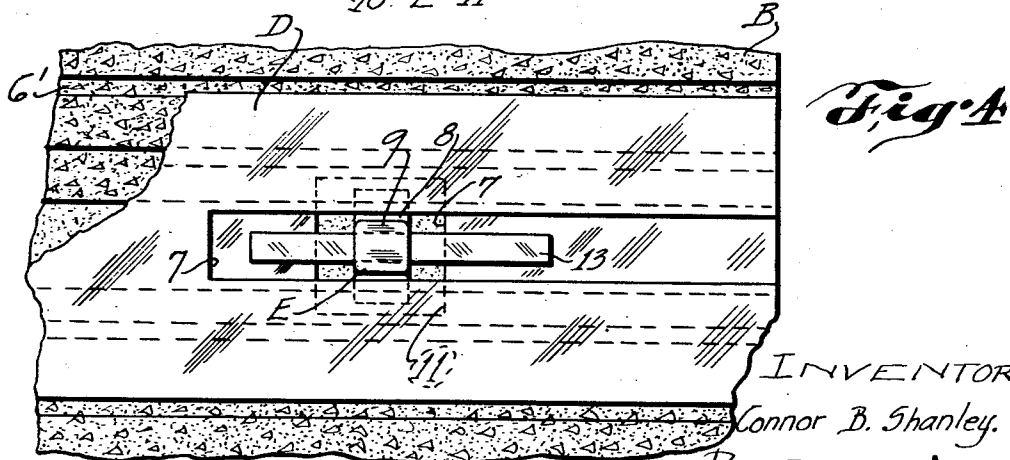
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EXPANSION JOINT STRUCTURE FOR PAVEMENTS, FLOORS, AND THE LIKE

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EXPANSION JOINT-STRUCTURE FOR PAVEMENTS, FLOORS, AND THE LIKE

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5 Claims. (Cl. 94-18)

This invention relates generally to pavements and has particular reference to expansion joint-structures for pavements, roads, walks, floors, and the like.

5 My invention is especially, though not exclusively, adapted for use in connection with concrete roads and highways, in which, as is well known to those skilled in the art, the road surface or pavement is for expansion purposes cast in sections or slabs on a suitable base or sub-
10 grade, allowance for expansion between the slab-sections being permitted by providing a suitable so-called expansion space, which expansion space generally creates a discontinuity and lack of
15 smoothness in the tread or surface of the pavement.

The chief object of my invention is to provide an expansion joint structure for pavements and the like in which the expansion space is bridged
20 or covered by a tread-plate set flush with the surface of the pavement, the tread-plate being supported on suitable shoulders cast in the opposing pavement-section ends and secured in place by suitable keying means engaging the
25 pavement-slabs, while allowing adequate expansion thereof.

Further objects of my invention are to provide in a pavement of the character described a tread-plate type of expansion joint structure, which
30 effectively protects the adjoining ends of the pavement sections, safely affords a large degree of expansion space between the sections, may be readily removed from the pavement structure for repairs to the tread plate or the pavement
35 structure itself, is economical in manufacture and installation, and practical, durable, and highly efficient in its intended use.

And with the above and other objects in view, my invention resides in the novel features of form, construction, arrangement, and combination of parts hereinafter described and pointed out in the claims.

In the accompanying drawing,—

45 Figure 1 is a top plan view of a pavement equipped with a joint-structure of my invention;

Figure 2 is an enlarged fragmentary sectional view of the joint-structure of my invention, taken approximately along the line 2-2, Figure 1;

50 Figure 3 is a fragmentary sectional view of the joint-structure, taken approximately along the line 3-3, Figure 2; and

55 Figure 4 is a fragmentary top plan view of the parts shown in Figure 3.

Referring now more in detail and by reference characters to the drawing, which illustrates a preferred embodiment of my invention, a conventional type of concrete highway or road construction is shown equipped with my improved joint-structure as an example of one use of my invention. In such constructions commonly, there is provided a foundation or support A, best seen in Figure 2, which may, as in the present instance, comprise a cinder or like filling laid on the so-called sub-grade or suitably prepared natural soil-material.

60 However, it may be here stated that, as in the construction of city streets, bridge floors, or similar structures, a suitable sub-base, usually of masonry, but possibly of steel, may be employed for supporting the pavement.

On the foundation A, is suitably cast, in the case of concrete pavements, a plurality of disconnected but longitudinally contiguous and aligned pavement sections or slabs B, the pavement being cast in sections for providing the usual construction joints to allow for and localize the construction of the pavement, and the opposing or confronting ends of each pair of pavement sections B being more or less suitably spaced apart, as shown, for accommodating an expansion joint to allow or compensate for the thermal expansion of the pavement structure due to
80 changing temperature conditions.

Such expansion joints are illustrated in Figure 1 as disposed transversely the direction of the pavement. However, it may be stated that, in relatively wide pavements, similar expansion joints may be provided longitudinally, as well as transversely, in the pavement.

In my invention the suitably spaced opposing or confronting faces of each pair of adjoining pavement sections B are partially cut away or reduced in thickness and the sections B thereby provided with opposed shouldered-end-portions 1, and the joint space between such sections is also thereby divided into a relatively wide upper part or channel 2 and a narrower or reduced lower
90 part or slot 3.

Adapted for disposition in the channel 2 to seat or rest on the slab-portions 1 for bridging the respective expansion spaces at the joints for connecting the pavement sections B, is a tread-plate or bar D disposed in a manner, as shortly appearing, to maintain the continuity of the surface of the pavement while allowing adequate expansion or contraction movement of the pavement structure.

The tread plate D preferably, as in the present

instance, extends also for the width of the pavement-section B and comprises a body-portion 4 of preferably rectangular or other suitable cross-section adapted, as stated, to reside in said channel 2 for engaging said shouldered portions 1, the width of the channel 2 being selected, I might add, to allow for the desired expansion clearance between the side walls of the channel 2 and the sides of the body portion 4 of the bar D, and the depth of the channel 2 being such that the upper face of the bar D is substantially flush with the top or upper surface of the pavement. Suitably disposed for preventing the entry of dirt and the like into the channel 2, is a pair of lateral wings or flanges 5 also flush at their upper face with the top of, and oppositely projecting from, the bar body portion 4, each pavement section B being correspondingly suitably cut away, as at 6, to accommodate the respective flanges or wings 5, as best seen in Figure 2, the wings 5 being preferably chamfered at their outer margin, as at 5', and the recesses 6 being correspondingly beveled, as at 6', to more effectively accommodate and permit contracting engagement between the bar-wings 5 and the pavement sections B.

For retaining or anchoring the bar D to the pavement sections B, a longitudinal channel or groove 7 is provided in each of the opposite end portions of the upper or tread surface of the bar D, opening into which and disposed vertically through the bar-body 4 are respective preferably rectangular apertures 8, which also, as shown, communicate at their lower end with the expansion space or slot 3 between the opposing pavement-ends or shoulders 1.

Having a stem 9 adapted for projection upwardly through a respective aperture 8, is a T-bolt E, the head 10 of which is adapted, when its axis is parallel with the slot 3, for passage therebetween into a suitable recess 11 provided for the purpose in the foundation A, the head 10, however, when turned crosswise of the slot 3, engaging upon the under faces of the respective flanges or shoulders 1 of the sections B. The walls of the slot 3 are, of course, sufficiently spaced apart to provide clearance therebetween and the stem 9 of the bolt E to allow for the desired expansion of the pavement-sections.

The stem 9 of the bolt E is provided adjacent its upper end with an aperture 12 disposed transversely to the axis of the head 10, and longitudinally disposed in the channel 7, is a taper key 13 adapted to be passed through the aperture 12, when the bolt-head 10 is crosswise disposed in the recess 11, for wedging engagement of said key 13 between the outer wall of the aperture 12 and the floor of the channel 7, thus effectively detachably clamping and securing the bar D to the pavement sections B. I might add that the T-bolt E and, of course, the key 13, both reside below the surface of the pavement-sections B, a suitable more or less readily removable mastic filler or the like 14 being deposited in the grooves 7 after the assembly of the parts.

In use, the foundation A being suitably prepared with the recesses 11, the pavement sections B are constructed, as described, and the T-bolts E inserted in the manner set forth crosswise of the expansion slot 3 for engaging the underside of the pavement slabs, the stems 9 upstanding hence into the space or channel 2.

The tread bar D is then disposed in the channel 2 with the stems 9 of the bolts E projecting

through the apertures 8, and the wedge-keys 13 driven in place. It will hence be seen that the bar D may be installed in a simple, facile manner and also that its removal for repairs to the joint structure or to the surrounding pavement may be quickly and easily accomplished. The wedging action of the keys 13 is highly efficient in resisting the dislodging tendency of vibration occasioned by traffic on the pavement, and I might point out that the slab-shoulders 1, which support the tread-bar D, and also the edges of the pavement sections B, are adequately protected from the erosive effects of traffic on the pavement, thus providing a strong, durable, and highly efficient joint construction for the purposes intended.

It will be understood that my invention may be employed with other than the concrete pavement structures described, hence I do not wish to be limited to the specific type and use of pavement construction shown, and it will be further understood that changes and modifications in the form, construction, arrangement, and combination of parts may be made and substituted for those herein shown and described without departing from the nature and principle of my invention.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. In an expansion joint structure for pavements and the like, in combination with a pair of contiguous pavement sections having spaced confronting shouldered portions, a tread bar having a rigid body-portion disposed in spaced relation between, and resting on the shouldered portions of, said sections, and means including a T-bolt adapted for engagement with the bar and with said section portions for anchoring the tread-bar in place.

2. In an expansion joint structure for pavements and the like, in combination with a pair of contiguous pavement sections having spaced confronting shouldered portions, an apertured tread bar disposed in spaced relation between, and resting on said shouldered portions of, said sections, and means for anchoring the bar in place, said means including a T-bolt adapted for projection at its shank into the aperture of the bar and for engagement at its head with said section portions, and a member for detachably securing the bar to the bolt.

3. In an expansion joint structure for pavements and the like, in combination with a pair of contiguous pavement sections having spaced confronting shouldered portions, a tread bar disposed in spaced relation between, and resting on said shouldered portions of, said sections, the bar having a surface channel and an aperture opening at an end into said channel and at its other end to the under face of the bar, and means for anchoring the bar to said sections, said means including a T bolt adapted for projection at its shank through said aperture into said channel and for engagement at its head with said section-portions, and a wedge key adapted to reside in said channel and for engagement with the bolt-shank for detachably securing the bar to the bolt.

4. A tread bar for an expansion joint structure for pavements comprising a body-portion adapted to reside in a channel in the pavement, said bar having a surface channel and an aperture opening at an end into the channel and at its other end to the under face of the bar, a T-member adapted for engagement at its head with the

pavement structure and for projection at its shank through said aperture into the channel, the shank having an aperture, and a key adapted for shiftable movement in the channel and through said shank-aperture for detachably securing the T-member and bar together.

other end to the under face of the bar, a T-member adapted for engagement at its head with the pavement structure and for projection at its shank through said aperture into the channel, the shank having an aperture, a key adapted for shiftable movement in the channel and through said shank-aperture for detachably securing the T-member and bar together, and lateral space-bridging pavement-engaging wings on the bar.

5. A tread bar for an expansion joint structure for pavements comprising a body-portion adapted to reside in a channel in the pavement, said bar having a surface channel and an aperture opening at an end into the channel and at its

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