

[54] **EXPANSION JOINTS FOR A ROADWAY**

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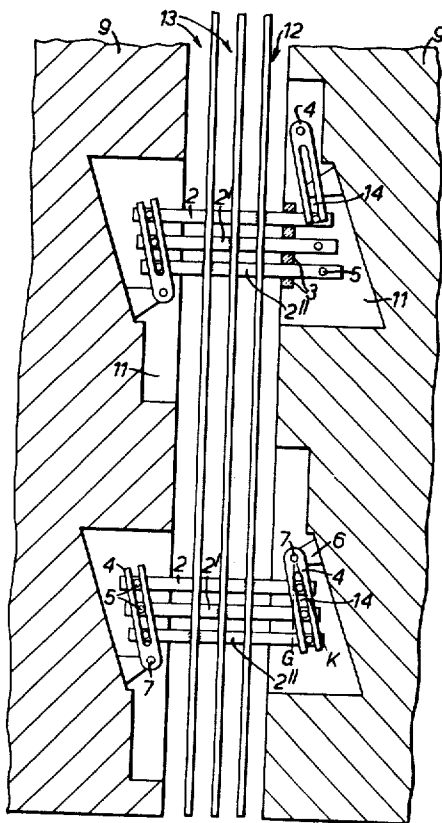
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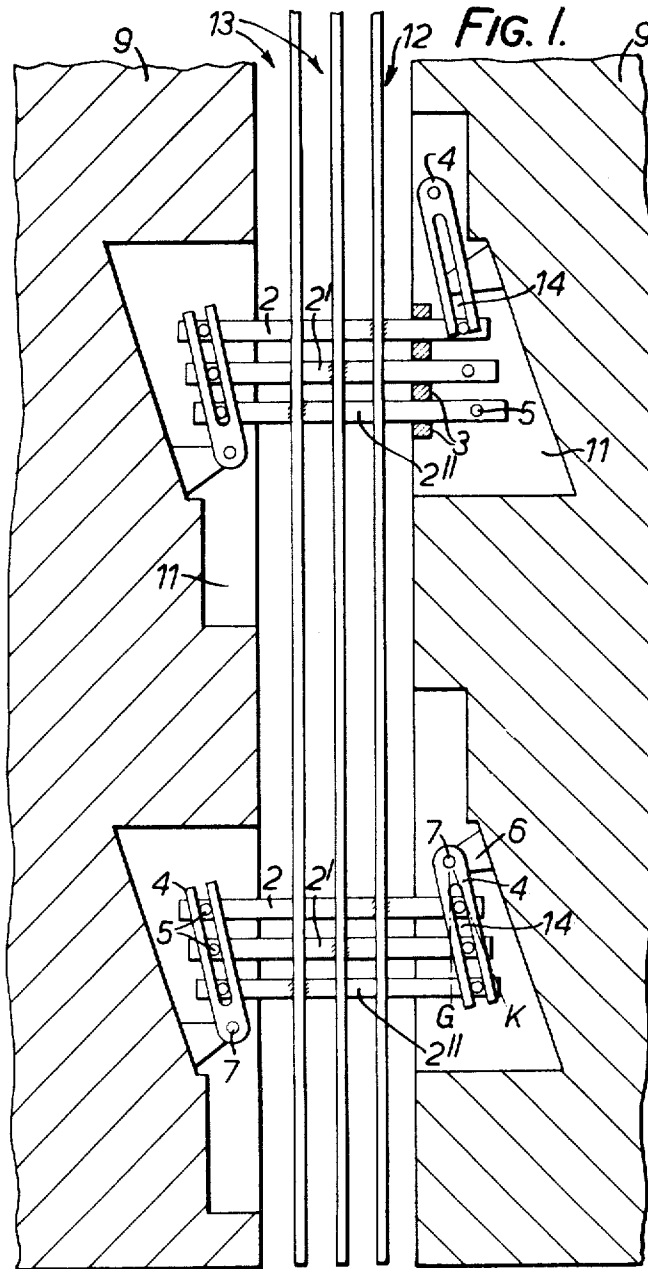
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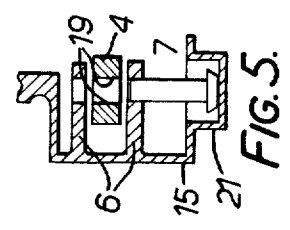
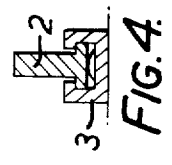
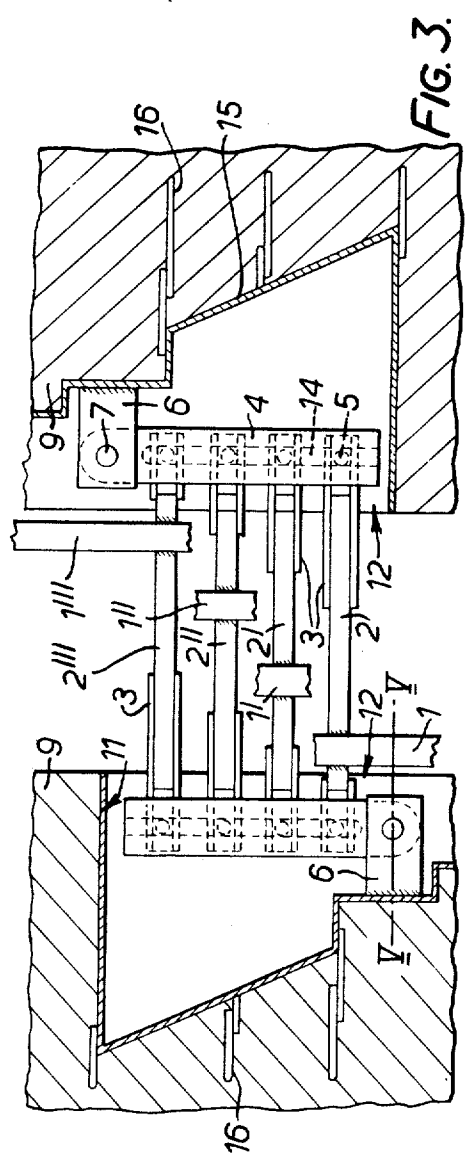
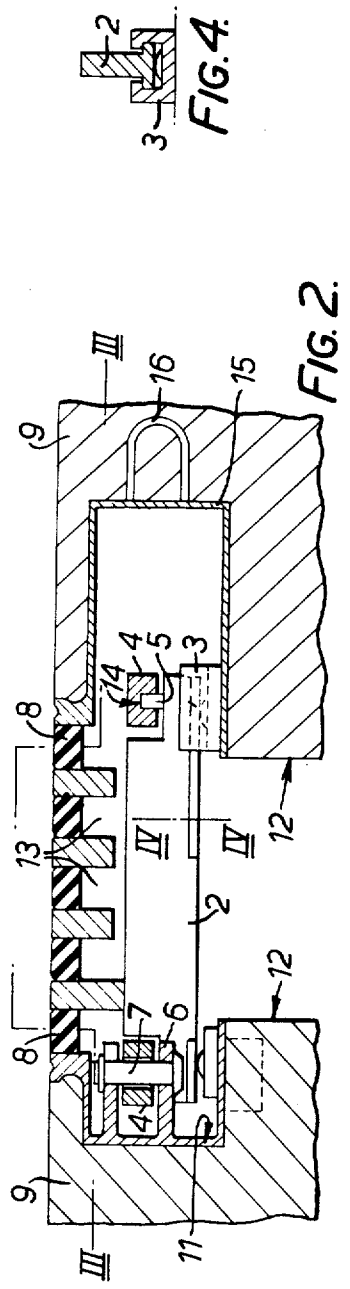
ABSTRACT

An expansion joint for a roadway has the gap between sections divided into part-gaps by a number of bars, and cross-pieces each connected to one of the bars and all connected between a pair of joint members to be secured to the two parts of the roadway ensure that as the gap changes in size due to expansion and contraction of the roadway, the bars move to keep the part-gaps of equal size.

13 Claims, 5 Drawing Figures







EXPANSION JOINTS FOR A ROADWAY

This invention relates to an expansion joint for a roadway or other structure, and one object is to provide such a joint in which the gap can be divided into a number of part-gaps and in which the joint permits relative movement between the structure parts on opposite sides of the gap in different ways.

According to the invention an expansion joint for a roadway or other structure comprises at least one supporting bar for dividing the gap between two parts of the structure into part-gaps, and a coupling between the, or each, bar and each of a pair of joint members arranged to be mounted in respective spaces one in the face of each of the structure parts facing the gap, whereby a change in the width of the gap retains the relative position of the, or each, bar in relation to both structure parts.

Preferably there are X bars for dividing the gap into X+1 part-gaps and the coupling arrangements are such that as the gap changes its width due to movement of the part-structure, the gap will continue to be more or less equally divided into part-gaps by the bars.

The use of a number of bars in such a road joint enables traffic to pass over the joint with a minimum of disturbance and the coupling arrangement ensures that the loads can be conveniently transmitted to the joint members fitted into the faces of the structure on either side of the gap.

The invention may be carried into practice in various ways and one embodiment will now be described by way of example with reference to the accompanying drawings, in which:

FIG. 1 is a view from above of a gap between adjacent sections of a road (shown in section) using two joints embodying the invention;

FIG. 2 is a section through one of the joints of FIG. 1;

FIG. 3 is a plan view partly in section on the line III—III in FIG. 2;

FIG. 4 is a scrap section on the line IV—IV in FIG. 2; and

FIG. 5 is a scrap section on the line V—V in FIG. 3.

In the edges of the abutting sections 9 of the roadway (shown in section) are formed spaced or recesses 11 each for the accommodation of a joint member, two of which joint members constitute an expansion joint in conjunction with three bars 1, 1' etc equally spaced in the gap 12 between the sections 9 to divide it into part-gaps 13. The upper surface of the bars are in the upper surface of the roadway and seals 8 are removably fitted into each of the part-gaps 13.

Each bar 1 is welded to one of three cross pieces 2, 2' etc., extending across the gap at right angles to the bars having one end coupled in each joint member by way of an upstanding pin or trunion 5 which can slide in a slot 14 in a lever arm 4 pivotally mounted about a vertical axis 7 from a bracket 6 welded to a casing 15 forming a housing for the joint member. There is a single arm 4 coupled to the trunions 5 on all three cross pieces 2, 2' and 2''.

The cross pieces 2 can slide in the direction of their length in sliding bearings 3 shown best in FIGS. 2 and 4, and diagrammatically in FIG. 1. The casing 15 has welded to it a number of metal loops 16 enabling it to be secured firmly to the roadway section when the con-

crete of that section is poured around the joint member and solidifies.

If the two roadway sections 9 move towards each other to reduce the width of the gap 12 the pivot pins 7 in the lower part of FIG. 1 also move towards each other so that the arms 4 move to a position in which they extend at a greater angle to the length of the gap, for example, to the position indicated at K in FIG. 1. A parallelogram is defined between each pair of cross pieces 2 and the arms 4, the opposite corners of which are defined by a pivot axis 7. The angle of the parallelogram is more acute for narrow gaps and in fact the parallelogram becomes a square in the position indicated at G in the lower part of FIG. 1 when the gap is at its widest position.

It will be clear that the movement of the arms controls sliding of the cross pieces 2 in their bearings 3 to retain the bars at equal spaces in the gap 12 in spite of the changing size of the gap.

The vertical pin connection at 7 together with the pin and slot coupling 5, 14, between the cross pieces and the arms permits some relative vertical movement between the road sections 9 and also by having the section of the bore through the arm 4 where it sits on the pin 7 of double concave form as shown at 19 in FIG. 5, there is permitted some freedom in relative angular movement.

If it is necessary to replace the arms 4 due to wear in use the pin 7 can be dropped out as shown in FIG. 5 into a recess 21 by removal of a nut at its upper end above the bracket 6 and the arm can be slid as shown in the upper part of FIG. 1 clear of the pins 5 for removal by way of the gap 12 and for subsequent replacement by virtue of the fact that the arms are positioned above the cross pieces 2, after the removable seals have been removed.

It will be clear that there is also freedom for some relative movement between the parts 9 parallel with the length of the gap 12.

What I claim as my invention and desire to secure by Letters Patent is:

1. An expansion joint for a roadway or other structure comprising at least one supporting bar for dividing the gap between two parts of the structure into part-gaps, the bar having a rigid connection to a second bar, said second bar extending across the gap between a pair of joint members arranged to be mounted in respective spaces one in the face of each of the structure parts facing the gap, the second bar cooperating with a sliding bearing in each joint member; whereby a change in the width of the gap retains the relative position of the bar in relation to both structure parts.

2. A joint as claimed in claim 1 including a plurality of bars dividing the gap into part-gaps and a plurality of couplings each of which couples one of the bars to the joint members.

3. A joint as claimed in claim 2, in which each joint member has a pivot arm having a slot coupled through a sliding connection with an end of the or each coupling.

4. A joint as claimed in claim 3 in which the arms are removable from the joint members.

5. A joint as claimed in claim 4 in which the slotted arms are above the couplings.

6. A joint as claimed in claim 5 including a sealing strip for sealing each part-gap and removable from the part-gap.

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7. A joint as claimed in claim 3 in which there is freedom of movement between the couplings and the joint members parallel to the pivot arms.

8. A joint as claimed in claim 7 in which there is freedom of angular movement of the couplings in relation to the joint members about the axes perpendicular to the pivot axes.

9. A joint as claimed in claim 8 in which two joint members and two couplings define a parallelogram whose shape varies as the width of the gap varies, the pivots being at opposite corners of the parallelograms.

10. A joint as claimed in claim 9 in which each joint member includes a box for insertion in the space in the face of the structure part.

11. An expansion joint for a gap between two parts of a roadway comprising a plurality of parallel bars

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spaced from one another characterised by a plurality of cross pieces parallel to and spaced from one another, and each fixed to one of the bars, two joint casings, and a pivoted arm in each casing, all the cross pieces having one end slidingly connected to the arm in one casing and the other end slidingly connected to the arm in the other casing.

12. A joint as claimed in claim 1, a plurality of said joints being arranged at intervals along the gap with the joint members of each joint mounted in spaces in the face of the structure parts facing the gap.

13. A joint as claimed in claim 1 including a slide in each casing for constraining each cross-piece to slide along a fixed axis in relation to the casing.

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