April 27, 1937. R. M. SIMRALL 2,078,693

EXPANSION, CONTRACTION, AND CONSTRUCTION JOINT FOR CONCRETE PAVEMENTS AND THE LIKE

Filed May 18, 1934 2 Sheets-Sheet 1

Fig. 1

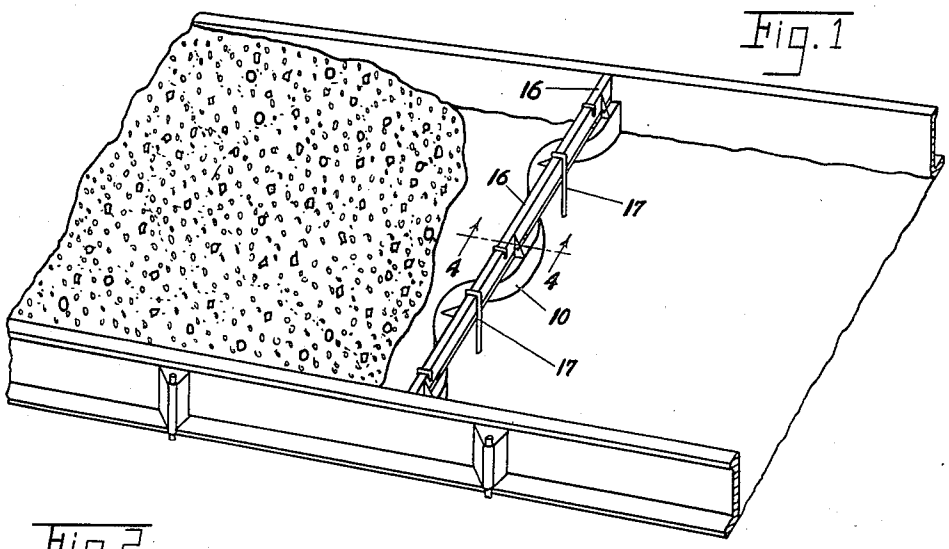
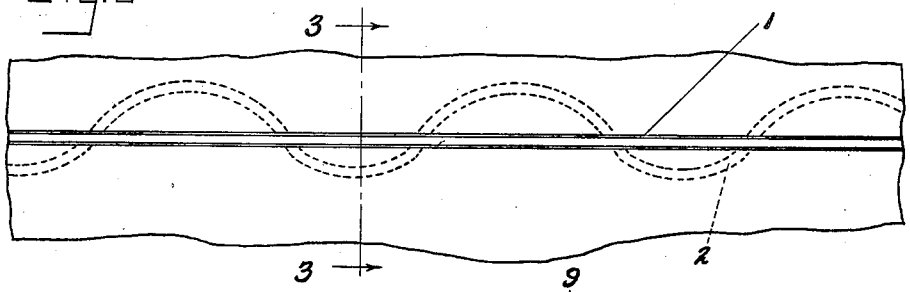


Fig. 2



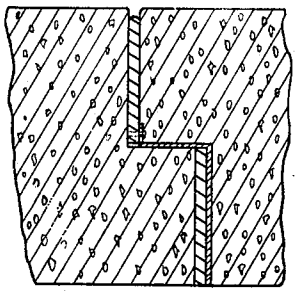


Fig. 3

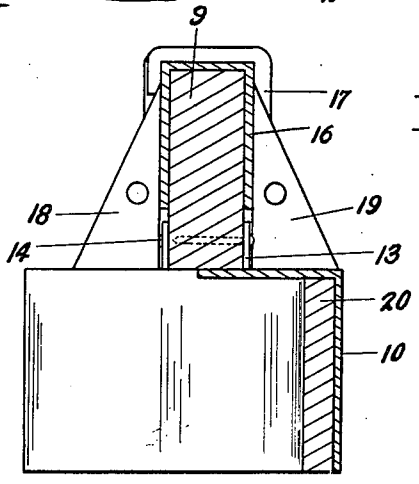


Fig. 4

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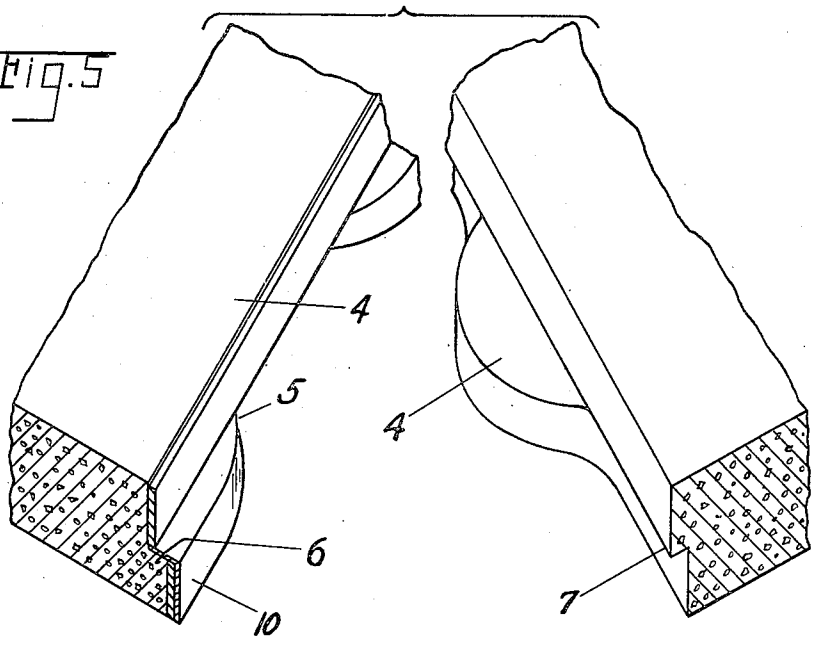
Attorneys

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Fig. 5



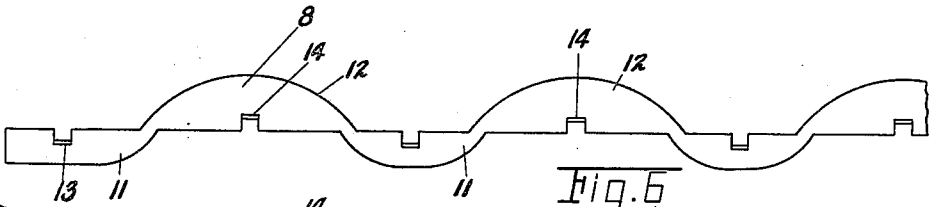


Fig. 6

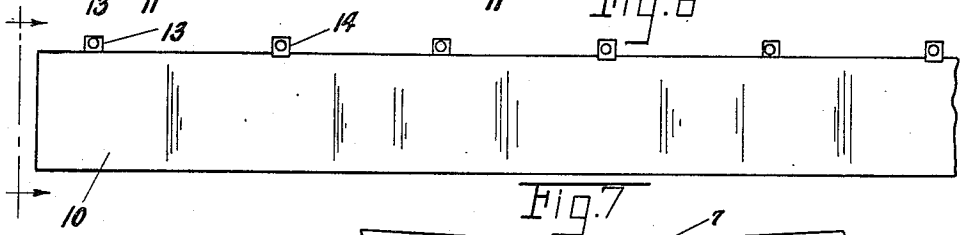


Fig. 7

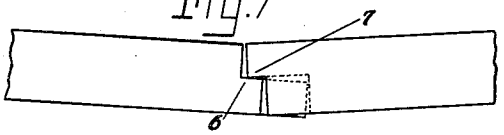


Fig. 9

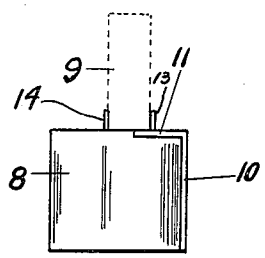


Fig. 8

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2,078,693

UNITED STATES PATENT OFFICE

2,078,693

EXPANSION, CONTRACTION, AND CONSTRUCTION JOINT FOR CONCRETE PAVEMENTS AND THE LIKE

Riley M. Simrall, Wyoming, Ohio

Application May 18, 1934, Serial No. 726,222

6 Claims. (Cl. 94—18)

The object of my invention is a pavement joint of a construction that would permit of the transfer of the load from one side of the joint to the other, in the traffic lane, and in which a bending at the joint, that would be caused by heavy loads, would not cause the concrete adjacent to the joint to be cracked.

I attain this end by providing a joint which in the upper half of the pavement is in a straight line which permits a hinge-like action between adjacent slabs under a bending strain, and in the lower part of the joint is in a series of curves which form interlocking shelves that distribute the load from one slab to the other.

In the accompanying drawings which illustrate the object of my invention, Fig. 1 is a perspective view of a part of a pavement in the course of construction showing the elements for forming the joint.

Fig. 2 is a plan view of a joint showing the straight line of the joint in full lines, and the curved line of the joint in dotted lines.

Fig. 3 is a sectional view on line 3—3 of Fig. 2.

Fig. 4 is a detailed sectional view of a mold which is used in making the joint.

Fig. 5 is a perspective diagrammatical view of portions of adjacent slabs.

Fig. 6 is a plan view of the metal part of the mold for forming the joint.

Fig. 7 is an elevation of the metal part.

Fig. 8 is an end view of the metal part of the mold, the fiber strip that is supported by the metal part of the mold being shown in dotted lines.

Fig. 9 is a diagrammatical end view of a joint showing the positions that the slabs take relative to each other under a stress.

The upper half of the joint embodying my invention is in a straight line 1, that permits a hinge-like action between the slabs, as shown in Fig. 9, and the lower half of the joint is in a curved line 2, see dotted line, Fig. 2, that forms a series of horizontal projections 4 on one slab and a complementary recess 5 in the adjacent slab and shelves 6 and ledges 7 upon the lower and upper parts respectively of adjacent slabs. The main parts of the molds which form these projections, recesses, shelves, and ledges, aforesaid, comprise a metal portion 8 and a fibrous strip 9. The metal portion of the mold consists of a vertical strip in the form of a double curve 10 and a series of inwardly projecting horizontal flanges 11 and 12. The flanges have upwardly projecting vertical perforated lugs 13 and 14, the series of lugs 13 being in transverse alignment with each other, the series of lugs 14 being in transverse alignment with each other, the lines of the lugs 13 and 14 being spaced apart a distance equal to the thickness of the fiber strip 9 which is held upon the metal part by longitudinal pins 15 which pass through the lugs 13 and 14.

In use, the molds made up of the metal portion 10 and the fiber portion 9, are set at the determined distances apart transversely of the road to be formed, as shown in Fig. 1. Preferably the mold is held in place by a transverse metal cap 16 and a series of pins 17 driven into the roadbed. The cap 16 is in the form of an inverted trough which has upon its sides a series of feet 18 and 19 that rest upon the flanges 11 and 12. A filler 20 in the form of a double curve is placed against the face of the vertical portion 10 of the mold before the same has been secured in place by the pins 17. After the series of molds have been positioned as shown in Fig. 1, the concrete is poured in the usual way, and embeds the mold. After the concrete has been "struck-off", the pins 17 and the cap 16 are removed, leaving the metal portions 10 and the fiber portions 9 and 20 embedded in the joint. Upon the projection 4 and the shelf 6, the complementary ledges 4' and 7 of the respective slabs rest and serve to transfer the load from one slab to the other. When a load depresses the slabs adjacent to a joint, a hinge-like action takes place about the straight upper line of the joint and prevents any longitudinal strain being placed upon the edges of the slabs and thus obviates any cracking therein. The straight faces at the joints of adjacent slabs, return to their normal relative positions after such hinge-like action under loads, and thus are not pulled apart so as to leave the joints set in "open" positions.

What I claim is:

1. An interlocking joint between two adjacent slabs each of which consists of a vertical upper edge and a vertical lower edge, the lower edge of one slab consisting of alternate projections and recesses adapted to interlock with similar projections and recesses formed in the lower edge of the second slab, said recesses and projections being formed with upper horizontal faces to provide horizontal shelf portions dividing the upper from the lower vertical edge of each slab.

2. An interlocking joint between two adjacent slabs each of which consists of a vertical upper edge and a vertical lower edge, the vertical upper edge and vertical lower edge of each slab being laterally spaced from each other to provide horizontal shelf portions dividing said upper and low-

er edges, the lower edge of one slab consisting of alternate projections and recesses adapted to interlock with similar projections and recesses formed in the lower edge of the second slab.

3. An interlocking joint between two adjacent slabs each of which consists of a vertical upper edge and a vertical lower edge, the vertical upper edge and vertical lower edge of each slab being laterally spaced from each other to provide horizontal shelf portions dividing said upper and lower edges, the lower edge of one slab consisting of alternate projections and recesses adapted to interlock with similar projections and recesses formed in the lower edge of the second slab, the upper vertical edges of the slabs forming a straight line extending horizontally of the slabs whereby the joint will be capable of hinged movement in one direction only.

4. A form adapted to be cast in situ to provide an interlocking joint for joining adjacent slabs in concrete pavement or the like, the adjoining faces of the slabs providing means for transferring road load in both directions of vehicular travel, the joint as fashioned by the form consisting of a shelf fashioned from the material of each slab and paralleling the neutral axis of each slab, each slab face consisting of a vertical upper edge and a vertical lower edge, the lower edge of one slab consisting of alternate projections and recesses adapted to lap over its companion slab and be supported and having bearing upon the shelf of its companion slab, and the adjacent upper edges of the adjoining slabs forming the joint being maintained in a straight line by the form whereby the joint will be capable of hinged action in one direction only.

5. An interlocking joint for joining adjacent slab ends in concrete pavement or the like and providing means for transferring road load in both directions of vehicular travel and which consists of a ledge type structure formed of the material of the slabs and comprises a continuous shelf paralleling the neutral axis of each slab and extending across the full width of the pavement, each slab end consisting of a vertical upper edge and a vertical lower edge, the lower edge of one slab consisting of alternate projections and recesses adapted to interlock with projections and recesses formed in the lower edge of the companion slab and supported and having bearing upon the shelf of its companion slab, and the adjacent upper edges of the adjoining slabs forming the joint being in a straight line to permit the joint to hinge in one direction only.

6. Means for joining adjacent slabs in concrete pavement or the like and for transferring road load in both directions of vehicular travel consisting of a ledge type joint fashioned from the material of the slabs, a shelf extending across the face of each slab paralleling the neutral axis of each slab, each slab having bearing upon the shelf of its companion slab, each slab face consisting of a vertical upper edge and a vertical lower edge connected by said shelf, the lower edge of one slab consisting of alternate projections and recesses adapted to interlock with similar projections and recesses formed in the lower edge of the companion slab, and the adjacent upper edges of the adjoining slabs forming the joint being in a straight line above the neutral axis of the slabs to permit the joint to hinge in one direction only.

RILEY M. SIMRALL.