Feb. 16, 1943. R. B. TUFTS 2,311,286

PAVEMENT JOINT

Filed May 8, 1940 2 Sheets-Sheet 1

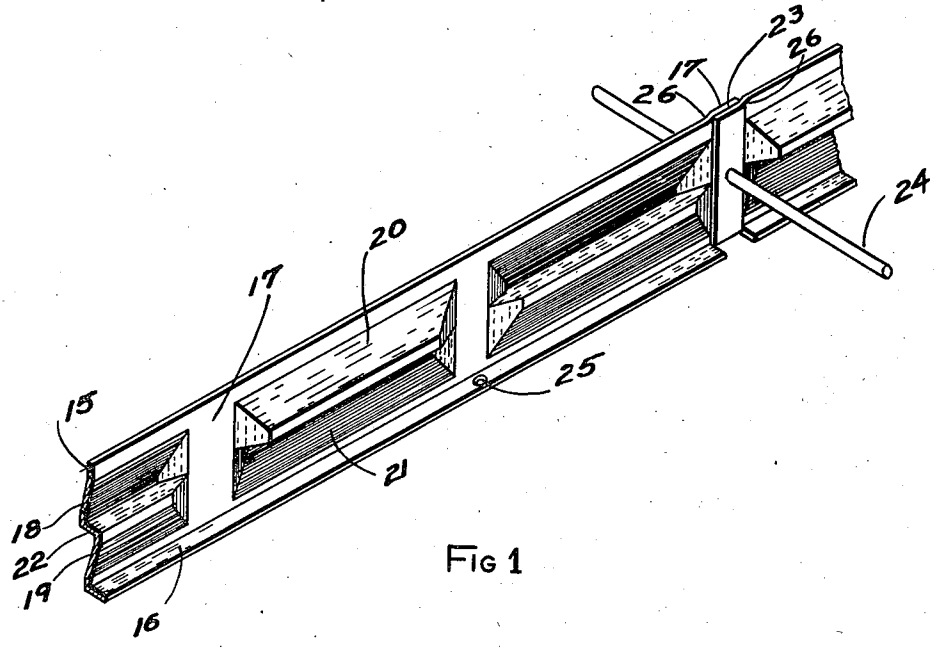

FIG 1

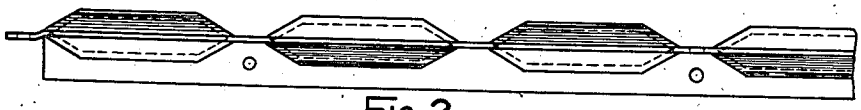

FIG 2

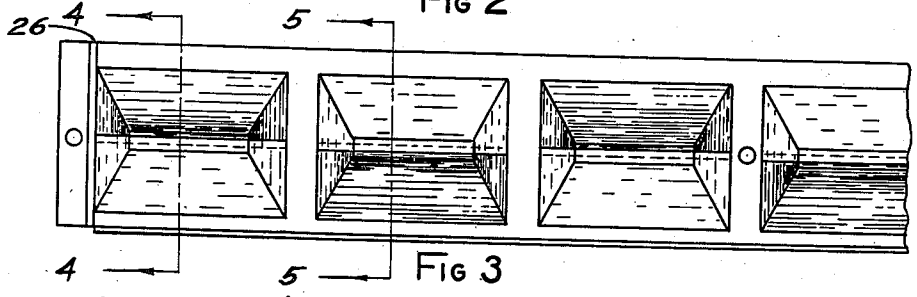

FIG 3

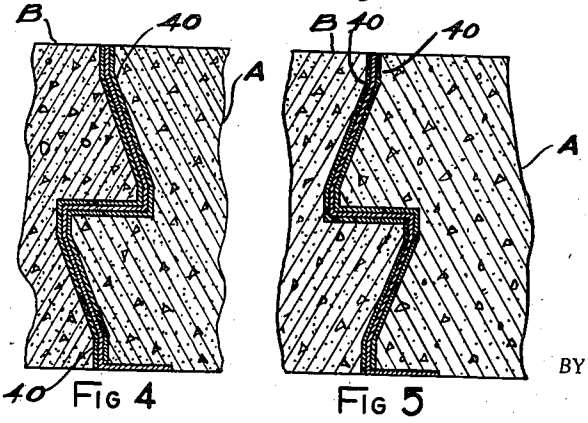

FIG 4

FIG 5

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Feb. 16, 1943. R. B. TUFTS 2,311,286

PAVEMENT JOINT

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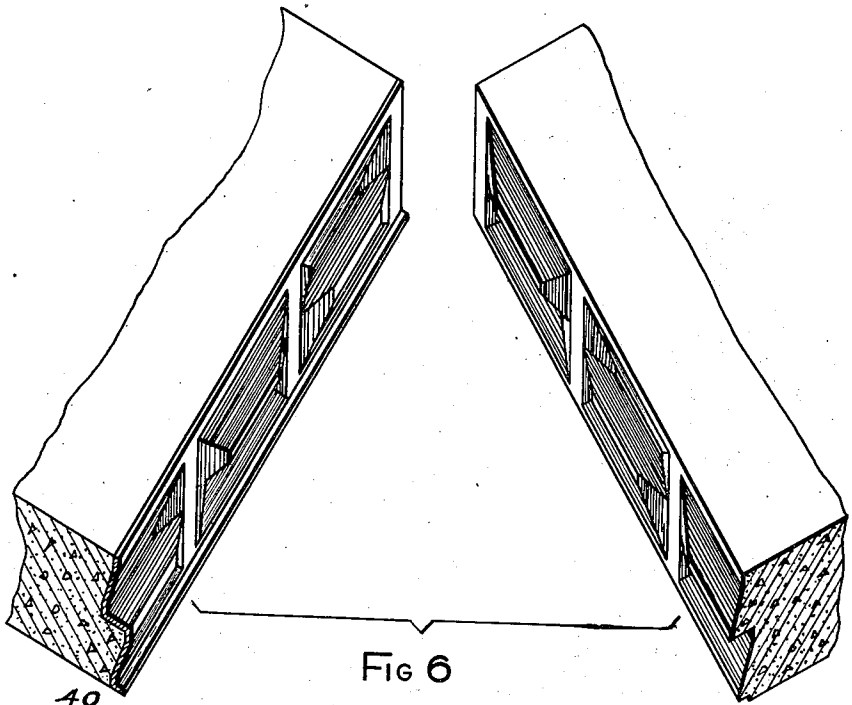

FIG 6

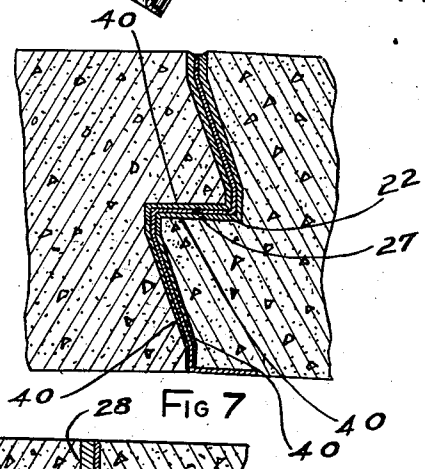

FIG 7

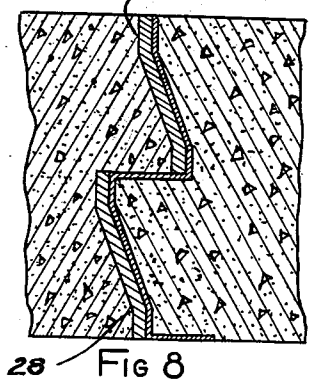

FIG 8

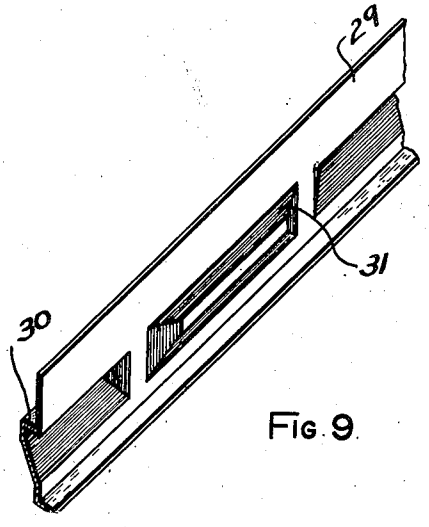

FIG. 9

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Patented Feb. 16, 1943 2,311,286

UNITED STATES PATENT OFFICE

2,311,286

PAVEMENT JOINT

Robert B. Tufts, Atlanta, Ga.

Application May 8, 1940, Serial No. 334,046

1 Claim. (Cl. 94—17)

The invention relates to joints for pavements and has as an object the provision of a joint which will obviate irregular cracks in pavements, particularly such as occur longitudinally of the center of the pavement.

It is an object of the invention to provide a joint of the character that will provide a division between portions of the pavement and which will be straight where it intersects the surface.

Further objects of the invention are to provide a joint of this character that will provide for the support of the slab upon each side of the joint by the slab on the other side; and that will allow of free slight movements of the slabs relative to each other which are caused by warping or expansion or contraction of the slabs.

Further objects of the invention will appear from the following description when read in connection with the accompanying drawings showing illustrative embodiments of the invention, and wherein:

Figure 1 is a perspective view of a portion of the metallic separator for a joint of the invention;

Fig. 2 is a plan view of the structure of Figure 1;

Fig. 3 is a side elevation;

Figs. 4 and 5 are transverse sections on the corresponding section lines of Fig. 3;

Fig. 6 is a perspective view of a slab cast with the metal provided by the invention in situ and swung apart to show the form of the meeting sides;

Fig. 7 is a detail sectional view showing the result of movement of warpage of the slabs at the joint;

Fig. 8 shows a joint provided with material to provide for expansion; and

Fig. 9 shows modifications of the joint.

As shown the device comprises a sheet of metal having a vertical longitudinal portion **15** at its upper edge and a marginal flange **16** at its lower edge. Interspersed between portions **17** lying in the central plane of the sheet and in a plane of the portion **15**, there are shown portions struck out from the material of the plate of prismatic form, one portion **18** at the left of Figure 1 projecting in one direction from the sheet and the remaining portion **19** below the portion **18** projecting from the opposite surface of the sheet.

At **20** is shown a member similar to **18** but projecting in the opposite direction therefrom, and at **21** an oppositely directed portion similar to **19**.

It will be seen that at each location of the oppositely projecting prismatic portions there is a shelf **22** provided which is horizontal and at which concrete cast against the form will overlap in such a manner that at alternate sections each slab will provide a support for the other slab upon opposite sides of the form.

At the junction **23** or in any of the flat places **17** of the plates, the respective members may be perforated and dowel pins **24** may be passed through the openings. The bottom flange **16** is shown as perforated at **25**, which perforations may be utilized in the staking down of the form to hold the same in an upright position while the concrete is poured upon opposite sides, it being understood that the metal of the invention remains in situ after the pavement is cast.

The result of the embedding of the metal of Figures 1 to 3 inclusive in concrete is indicated in cross section in Figures 4 and 5 wherein slab A supports slab B at the section line **4—4**, whereas the reverse is the case at section line **5—5**.

The metal form of the invention may be coated upon either or both sides with a substantial layer of asphalt, or other compressible material **40**, Figs. 4, 5 and 7, and **28**, Fig. 8, in which event the joint of the invention will function as an expansion joint.

Fig. 7 illustrates the result when the two adjacent slabs have become warped or concave due to unequal temperatures of the upper and lower surfaces, the joint having risen from the supporting ground and deflection having taken place in the joint, the upper part of the joint having opened and the lower part of the joint having squeezed the asphalt coatings **40**, and rotation having taken place about center **27**.

In case the adjacent slabs should have warped to convex upper surfaces the joint will open at the bottom and close at the top.

The yielding asphalt coating will give similar results as if the slabs were separated a small amount before warping takes place.

The yielding asphalt coatings further permit of longitudinal expansion of the slab units, limited by the thickness of the coatings and the joint will open when contraction takes place.

Another form of the device is shown in Figure 9, wherein the metal is pushed out from the plane of the sheet in one direction only at each section, thereby providing that the upper portion **29** at each section has a perpendicular face

down to the shelves 30 and 31. This will provide greater strength for the support of each slab by the other as the extent of the concrete which must shear in order to cause relative vertical movement between the slabs is greater than that provided by the first form of the invention referred to.

Joints of this character are quite suitable for a longitudinal joint at the center of a roadway or for joints transverse to the roadway, if spaced comparatively close to each other, and the metal form only requires a simple rolling or stamping operation for production thereof.

Minor changes may be made in the physical embodiments of the invention within the scope of the appended claim without departing from the spirit thereof.

I claim:

A joint for meeting edges of concrete slabs comprising a series of pairs of projecting ledges; each pair comprising a ledge projecting from the lower portion of the edge of one slab and a similar ledge projecting from the upper portion of the edge of the meeting slab; each of said meeting edges formed with complemental cavities to receive the opposing ledge; the lower and upper ledges of adjacent pairs projecting in opposite directions at said meeting edges; opposed faces of the ledges of the pairs lying adjacent a common horizontal plane whereby one ledge of each pair of forms a support for the other thereof; a face of each ledge inclined to a vertical plane through the joint passing through the center of the horizontal faces of the ledges and merging into said vertical plane to provide straight line joints at the top and bottom of the pavement; and a coating of compressible material carried by at least one of the meeting edges and covering the faces of the ledges including the horizontal faces thereof.

ROBERT B. TUFTS.