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E. E. HALL

2,016,858

JOINT

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Fig. 1.

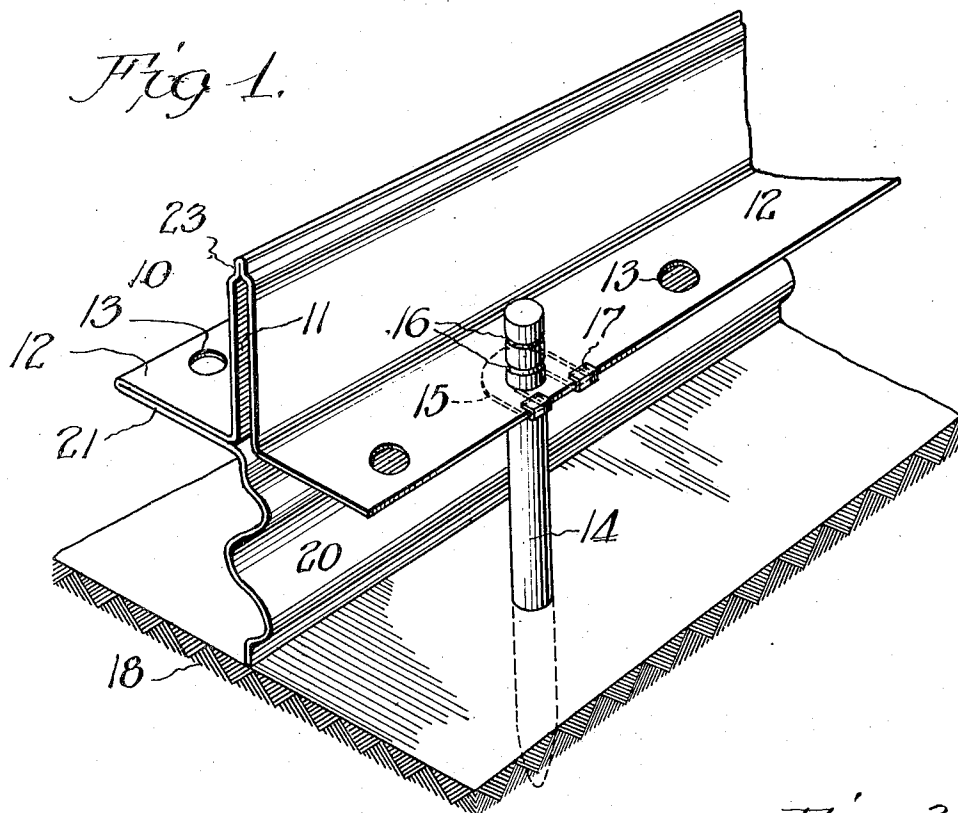


Fig. 2.

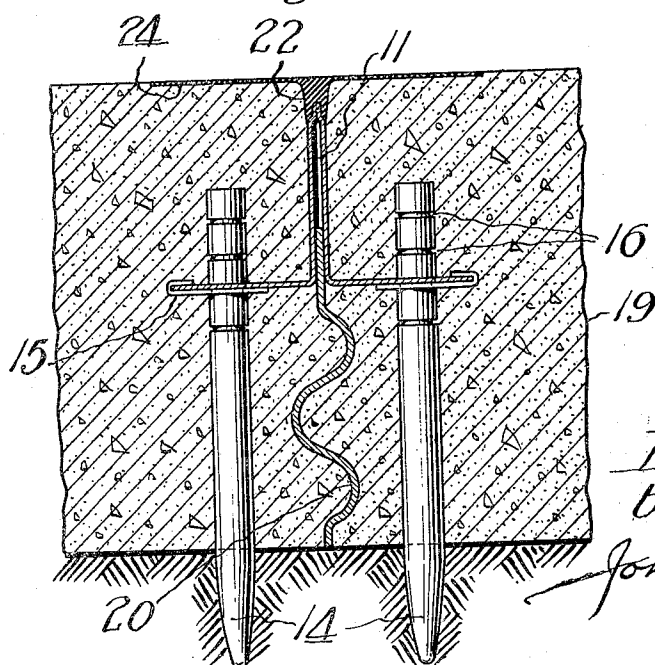
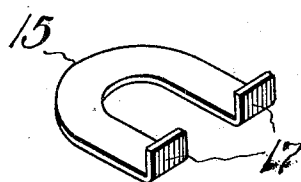


Fig. 3.



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UNITED STATES PATENT OFFICE

2,016,858

JOINT

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11 Claims. (Cl. 94—18)

My invention is concerned with joints, intended primarily for concrete road construction, and is designed to produce a simple and cheaply constructed joint that will take care of the varying conditions existing in road work and preserve the road from disintegration due to the formation of cracks.

To this end, it consists in a novel construction and method which is hereinafter fully described and claimed.

To illustrate my invention, I annex hereto a sheet of drawing in which the same reference characters are used to designate identical parts in all the figures, of which,—

Fig. 1 is a perspective view of one form of my invention before the concrete is poured;

Fig. 2 is a transverse section illustrating a slightly modified form, after the concrete has been poured and the joint completed; and

Fig. 3 is a perspective view of a clip which I may employ in my construction.

It is well understood by road engineers that, to take care of the expansion and contraction of the concrete due to changes in the temperature, it is advisable to construct the ordinary eighteen-foot road with a longitudinal crack or joint extending along the center, dividing it at all places into slabs nine feet wide, which will have a length depending upon the distance between the transverse expansion joints, if such are employed, or the irregular transverse cracks that develop if they are not employed. My invention is designed to produce a joint that is efficient in protecting the road, and which may be used for both the longitudinal and transverse joints.

In carrying out my invention, I employ as an essential element a sheet-metal strip 10 which is preferably substantially an inverted T-shape in cross section, but with the vertical portion consisting of two thicknesses of metal, preferably separated by a distance slightly greater than the thickness of the metal to form a channel 11 open at the bottom in the form shown in Fig. 1. The horizontal portions 12 are provided with apertures 13 therein of the proper size and shape to accommodate the positioning supports 14, which are preferably metallic rods sharpened at their lower ends and having a cross section adapted to fit in the apertures 13, and to have the horizontal portions 12 secured thereto by the sheet-metal clips 15, U-shaped in design, and adapted to have the bottom fit into any desired one of the annular channels 16 formed in the supports 14 to receive them, a plurality of chan-

nels being employed so that the strip 10 can be adjusted at any desired height from the base material 18, depending upon the thickness of the slab. The upturned ends 17 of these clips 15 are adapted to be bent over the edges of the portions 12, as seen, so that when the supports 14 are driven into the base material 18, the metallic joint member will be properly supported above it, as shown in Fig. 1, and held there securely when the concrete 19 is poured. It is unnecessary to place supports or stakes 14 in all of the apertures 13, and the concrete extending through these vacant apertures will necessarily bond the horizontal portions or flanges 12 to the slabs they penetrate, so that as the slabs contract the space between the vertical portions of the strip 10 increases, and diminishes as the slabs expand.

In addition to the T-shaped portion 10, I preferably employ the corrugated extension 20, which may be formed integrally therewith, as illustrated in Fig. 1, being connected thereto by the turned-under portion 21, or which may be formed separately, as seen in Fig. 2, and welded or otherwise secured in the bottom of the channel 11. It preferably extends down to the base material 18, and serves to form a tongue-and-groove connection between the adjacent slabs of concrete, so that pressure on one near the joint is also taken by the other.

Preferably after the concrete is poured, and while it is still soft, a groove 22 is scraped out down to a short distance below the top of the vertical portion of the metallic joint member 10, which is preferably here reduced in thickness, as seen at 23, by having the metal brought together so as to end the channel 11 at this height. This reduction in the thickness of the vertical portion makes its upper edge better adapted to receive and guide a tool which will be employed in scraping out the groove 22. Before the groove is scraped out, when it is a longitudinal center joint that is being constructed, I preferably run a narrow roller over the concrete, centering it over the joint 10, so that a very shallow channel 24 is formed, in the center of which the groove 22 is located. When the concrete is set, this channel 24 and the groove 22 are filled with some mastic filler, which takes care of the expansion, and keeps the dirt out of the joint. After this filler deteriorates, as it will in time, it can be readily scraped out by the tool used to form the groove 22, and replaced with fresh material, and the mastic in the channel 24 (or paint, which might be substituted) forms the customary marker for the longitudinal center joint.

With the structure shown, it will be obvious that a joint is formed that will take care of the normal expansion and contraction of the slabs, and one that compels any slab to take part of the load near by on the adjacent slab, without any relative movement of the slabs tending to destroy or weaken the joint. With the mastic filler kept in condition, no water can get into the joint to cause trouble, and even if the filler were missing, water cannot readily pass around the portions 12 to reach the bottom of the joint and enter the base material 18, where its presence would be detrimental.

While I have herein shown and described my invention as embodied in the form which I at present consider best adapted to carry out its purposes, it will be understood that it is capable of modification, and that I do not desire to be limited in the interpretation of the following claims except as may be necessitated by the state of the prior art.

What I claim as new, and desire to secure by Letters Patent of the United States, is:

1. In a pavement joint, the combination with a sheet-metal strip bent into a cross form in cross section with the upwardly extending portion formed of two layers of metal slightly separated and having the downwardly extending portion corrugated longitudinally, of supports adapted to extend through the horizontal side portions of the strip to the base material and to be finally embedded in the pavement material, and means for preventing the strip from being forced nearer to the base material when the concrete is being poured.

2. In a pavement joint, the combination of a member formed of a piece of resilient material bent upon itself to provide spaced walls movable relatively to each other at the bend, the material forming said walls being fashioned to provide an outwardly projecting extension at the lower edge of each of said walls, a support for said member, said support comprising a plate the upper termination thereof being located within the space provided between the spaced walls of said member and providing means assisting to hold said walls of said member in spaced relation to each other, and means for preventing the plate from being forced nearer to the base material when the concrete is being poured, said means consisting of a plurality of supports adapted to extend through the said outwardly projecting extensions of said member and into the base material, said means to be finally embedded in the pavement material.

3. A joint for concrete pavements and the like consisting of a strip of sheet metal of an inverted T-shape in cross section having apertures in the horizontal portions together with a strip of sheet metal substantially corrugated in cross section extending from the center of the first strip to the base material, and supporting pegs driven through some of the apertures into the base material and serving to position the joint while the concrete is being poured, and finally embedded therein.

4. In a pavement joint, the combination of a member formed of a piece of resilient material bent upon itself to provide spaced walls movable relatively to each other at the bend, the material forming said walls being fashioned to provide an outwardly projecting extension at the lower edge of each of said walls, a support for said member, said support comprising a plate, the upper termination thereof being located within the space providing means assisting to

hold said walls of said member in spaced relation to each other, and supporting members engaging the said outwardly projecting extensions and extending into the base material and serving to position the joint while the concrete is being poured, said supporting members to be finally embedded in the pavement material.

5. In a concrete pavement or the like, the combination with a pair of adjoining concrete slabs, of a sealing connection for the same compensating for the relative linear movement of the slabs, said connection consisting of a thin metallic strip whose cross section forms a narrow vertical loop closed at the top with the sides of the loop only slightly separated and having a pair of perforated flanges at the bottom of the loop, each one extending into its adjacent slab and secured thereto, supporting stakes embedded in the slabs and initially driven through the perforations of the flanges into the base material preventing possible overturning of the connection while the concrete is being placed, and means for preventing the connection from being forced nearer to the base material when the concrete is being placed, said last-mentioned means consisting of annular grooves in the stakes and U-shaped metal clips adapted to fit in the grooves of the stakes and have their ends bent over the edges of the flanges, for the purpose described.

6. In a pavement joint, the combination of a member formed of a piece of resilient material bent upon itself to provide spaced walls movable relatively to each other at the bend, the material forming said walls being fashioned to provide an outwardly projecting extension at the lower edge of each of said walls, and means for preventing the member from being forced nearer to the base material when the concrete is being poured, said means consisting of a plurality of stakes adapted to be affixed to the said outwardly projecting extensions of said member and extend into the base material and to be finally embedded in the pavement material.

7. In a concrete pavement or the like, the combination with a pair of adjoining concrete slabs, of a sealing connection for the same compensating for the relative linear movement of the slabs and consisting of a thin metallic strip, its cross section forming a narrow vertical loop closed at the top with the sides of the loop only slightly separated and having a pair of perforated flanges at the bottom of the loop, each one extending into its adjacent slab and secured thereto, and supporting means for said connection which prevents its possible movement while the concrete is being placed, the uppermost portion of the loop having its sides in actual contact and the central and lower portions of said loop having its sides slightly separated.

8. In a pavement joint, a sealing member formed of a piece of resilient material bent upon itself to provide a loop comprising a pair of spaced walls movable relatively to each other at the bend, the material forming said walls being fashioned to provide an outwardly projecting extension at the lower edge of each of said walls, the uppermost portion of said loop having its walls in actual contact, the central and lower portions of said loop having their walls slightly separated.

9. A device providing a seal for a space located between adjacent sections and a support for said seal, said device and support being formed of a single piece of material having one

edge thereof bent to provide a seal having a single pair of connected spaced walls, the inner faces of said walls being in actual contact with each other adjacent the point of connection, and a lateral flange extending from each wall, the latter providing means for bonding the seal with said sections, and a member providing said support extending downwardly from one of said flanges to the base material and being formed to provide means preventing the relative vertical movement of said sections.

10 10. A device for sealing a space between adjacent roadway sections compensating for the relative linear movement of said sections and providing a support from the base material for said sealing means, said device being formed of a single strip of metal one edge of which is

bent to provide spaced walls formed to provide a longitudinally extending recess therebetween, the inner faces of said walls being in actual contact with each other adjacent the point of connection, and a lateral flange extending from each wall, the material of one flange being bent back upon said flange and being bent downwardly to provide said support.

11. A seal of the kind described comprised of a single piece of material having a portion providing a support therefor, the upper edge of the support being formed to provide the seal by being bent laterally and thence inwardly and upwardly and thence downwardly and laterally and thus establishing parallel walls with a longitudinal recess therebetween.

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