July 25, 1939. A. CARNIE 2,167,199

CONTRACTION JOINT

Filed Jan. 3, 1938

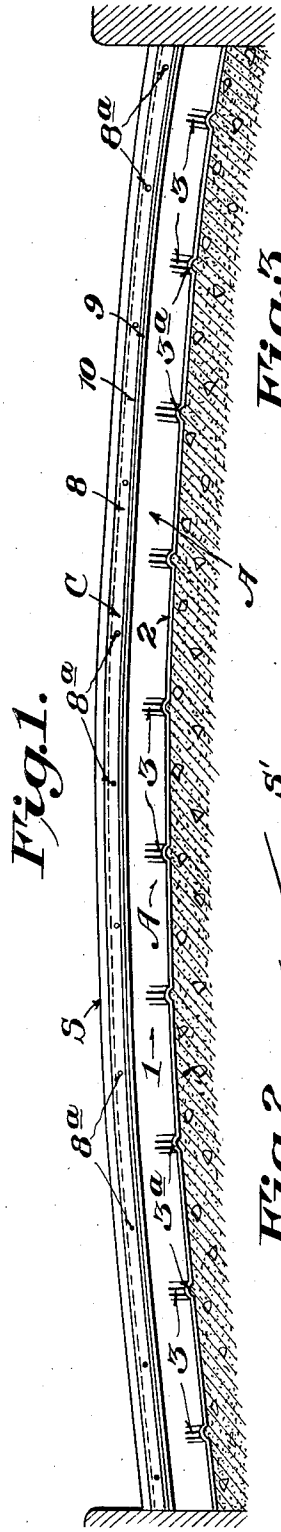


Fig. 1.

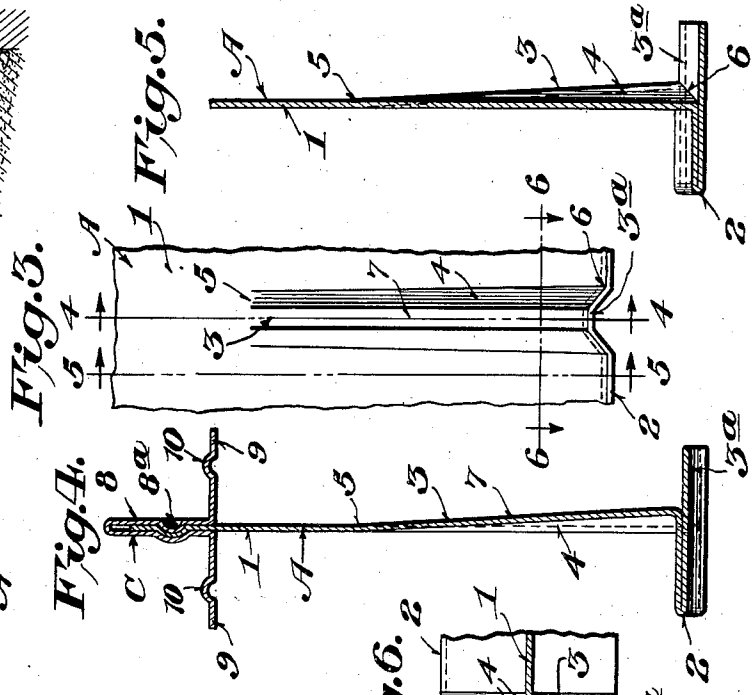


Fig. 5.

Fig. 3.

Fig. 4.

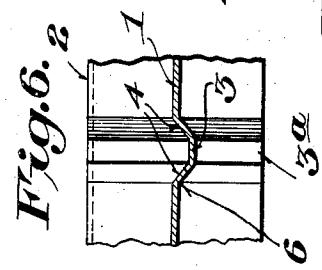


Fig. 6.

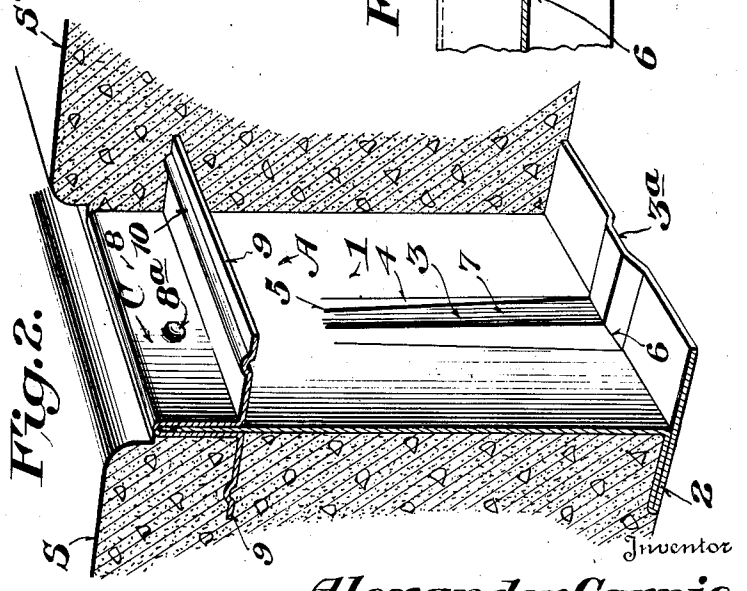


Fig. 2.

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CONTRACTION JOINT

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Application January 3, 1938, Serial No. 183,210

2 Claims. (Cl. 94—18)

This invention relates to contraction joints used in concrete roads or pavements for the purpose of directing or controlling the formation of a relatively small crack at predetermined points upon the contraction or setting of the pavement after it is poured.

In the building of concrete roadways, one or more contraction joints are placed transversely of the roadway in definite relation to the expansion joints, for example, at pre-determined intervals between the expansion joints, depending upon the size of the slab. Also, while contraction joints may be of the longitudinal or center type, nevertheless, the present invention is directed more especially to joints of the transverse type which must be curved to conform to the crown of the road.

Accordingly, a primary object of the invention is to provide a metal contraction joint having features of construction which permit it to stand erect across the roadway and at the same time coincide with a predetermined crown specified for the roadway. That is to say, the present invention contemplates the provision of a contraction joint having a base intended to rest on the sub-grade of the road to be poured, in such a way as to support the plate or web thereof in a vertical position, the metal of the plate as well as the base being crimped or gathered crosswise at intervals, in a predetermined direction and amount, to insure the proper curvature of the plate to correspond to the specified crown of the finished road slabs.

A further object of the invention is to provide a contraction joint having a metallic seal in the form of a cap plate fitted to the upper edge thereof, the said cap plate being utilized to form a more or less flexible joint between the concrete slabs permitting one to move relative to the other when necessary, and further preventing moisture or water from entering the joint.

With the above and other objects in view which will more readily appear as the nature of the invention is better understood, the same consists in the novel construction, combination and arrangements of parts hereinafter more fully described, illustrated and claimed.

A preferred and practical embodiment of the invention is shown in the accompanying drawing in which:

Figure 1 is a transverse sectional view of a roadway illustrating the application of the invention.

Figure 2 is a detail perspective view further illustrating the application of the invention.

Figure 3 is a fragmentary elevation of the plate showing the rib produced by the gathered metal at the bottom portion of the plate.

Figure 4 is a vertical sectional view taken on the line 4—4 of Figure 3.

Figure 5 is a vertical sectional view taken on the line 5—5 of Figure 3.

Figure 6 is a detail horizontal sectional view taken on the line 6—6 of Figure 3.

Similar reference characters designate corresponding parts throughout the several figures of the drawing.

According to the embodiment of the invention illustrated, the same includes in its organization a plate of metal of suitable length and height as well as of suitable gage, designated generally as A having a plain upper portion 1 and a foot portion or base 2 formed by folding over the metal at the bottom of the plate in right angular relation to the major plane of the plate to provide foot or base flanges extending on both sides of the plane of the plate. Thus, a substantial support is provided for maintaining the plate in a normally vertical position during the preliminary work in placing it in the roadway, although it will, of course, be understood that should suitable fastenings be required under special specifications, the base may be secured to the sub-grade in any suitable manner as by stakes or spikes without altering the fact that primarily the base 2 is intended to provide means for normally holding the plate upright. An additional function of the base 2 is to provide means for anchoring the joint in the roadway. That is to say, the base is embedded beneath the slabs to prevent the same from working upward.

At spaced intervals throughout the length of the plate A, there are provided a plurality of separate vertical flutes or crimps 3 which partake of the nature of offset ribs at one side of the plate and preferably extend for more than half of the height thereof. These offsets merge, at their lower ends with the horizontal offset portions or ribs 3a which extend transversely throughout the full width of the base 2 as indicated in Figure 4. Therefore, the effect of crimping or gathering the metal of both the plate and the base is to give the entire structure a predetermined or set curvature in accordance with a specified installation.

The elements 3 are preferably flared downwardly, that is, are narrow at the top and wider at the bottom, or in other words, the side edges 4 diverge downwardly approximately from a point 5 between the horizontal center of the plate and the top edge thereof to a point 6 located in the

base 2. The face 7 of each element 3 is substantially of uniform width throughout but the divergent relation of the sides 4 has the effect of gathering the metal of the plate progressively from the point 5 toward the bottom of the plate so as to shorten the length and thus curve the bottom edge portion of the plate while causing the upper edge to assume a corresponding curvature. The number, width and the spacing of the ribs or equivalent elements 3 varies with different specifications.

The vertical height of the plate A is preferably less than the height of the completed road slabs S and S' as will be apparent from Figure 2. The top edge of the plain portion 1 of the plate A may, if the specifications require, be provided with a cap member C, which is sufficiently flexible to readily adapt itself, and conform, to the curvature of the plate of the joint. This cap portion consists of the body 8 folded upon itself to provide for telescopically receiving the upper plain edge portion 1 of the plate, and the lower edges of said body 8 are provided with laterally outstanding wings 9 for embedment in the concrete slabs, which embedment may be enhanced by the provision of the locking or keying ribs 10. The body 8 is preferably held interlocked with the upper portion of the plate A by indentations or buttons 8a which engage with mating depressions in the plate.

When the contraction joint is installed with the cap C thereon it will be apparent that the wings 9 are embedded in the concrete and when the slabs move in contracting, the wings will cause the folds of the body to separate with the top of the fold serving as a hinging axis, and the wings 9 themselves will prevent water or moisture from seeping down in the space between the slabs formed by the body of the plate A.

In installations where the cap plate C is not required or specified it will, of course, be understood that the space at the upper edges of the slab may be filled with bituminous composition to render the joint weather proof.

In practice, after the contraction joint has been formed as described and shown in Figures 3–6 inclusive, it is laid transversely on the sub-grade of the roadway between the usual road forms, and because of the horizontal base 2, the plate will assume a normally upright position. Where the cap C is desired, the same is applied to the upper edge of the plate and the concrete for the slabs is poured, so that after the slabs have been made the entire contraction joint is embedded in the roadway as indicated in Figure 2.

From the foregoing, it will be apparent that applicant's invention comprises a contraction joint including a single vertical plate or web A whose upper portion remains plain or uncrimped while the bottom portion thereof including the horizontal base 2 is crimped or fluted at spaced intervals to cause gathering of the metal below the central portion of the plate thereby to impart the desired curvature to both the top and bottom edges of the joint. The displacements of the flutes or ribs 3 and 3a in the manner shown adequately provides for shortening the length of the lower portion of the plate while causing the upper edge to also assume a curvature on the selected radius.

Without further description it is thought that the features and advantages of the invention will be readily apparent to those skilled in the art, and it will, of course, be understood that changes in the form, proportion and minor details of construction may be resorted to, without departing from the spirit of the invention and scope of the appended claims.

I claim:

1. A contraction joint including a single substantially vertical plate and a horizontal base, said plate being provided with a plurality of vertical crimps laterally spaced below its upper edge while said upper edge remains straight to compel a straight line of cleavage transversely of the road, and said base being provided with upwardly pressed crimps to prevent the base from rocking and provide a firm support for the plate, said crimps in the base being located at the bottom of the crimps in the plate and together therewith providing means for shortening the lower chord of the plate and to impart a curvature to the upper edge thereof on substantially the same radius as the curvature of the base.

2. A contraction joint comprising a single vertical plate portion having the bottom edge thereof folded at right angles thereto to provide flanges extending on both sides of the vertical plane of the plate to constitute a firm base on which the joint rests and to maintain the plate vertical, and crimps formed in the plate and base, said crimps in the plate extending vertically thereof and having downwardly divergent side portions where they are pressed from the plate to prevent buckling and also provide for shortening the lower chord of the plate while leaving the top chord straight to compel a straight line of cleavage transversely of the road, and said crimps in the base being formed at the upper side thereof and corresponding in width to the width of the bottom of the crimps in the plate and extending across said base.

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