April 19, 1949. A. E. BRICKMAN 2,467,806

EXPANSION AND/OR CONTRACTION JOINT ASSEMBLY

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Fig. 1.

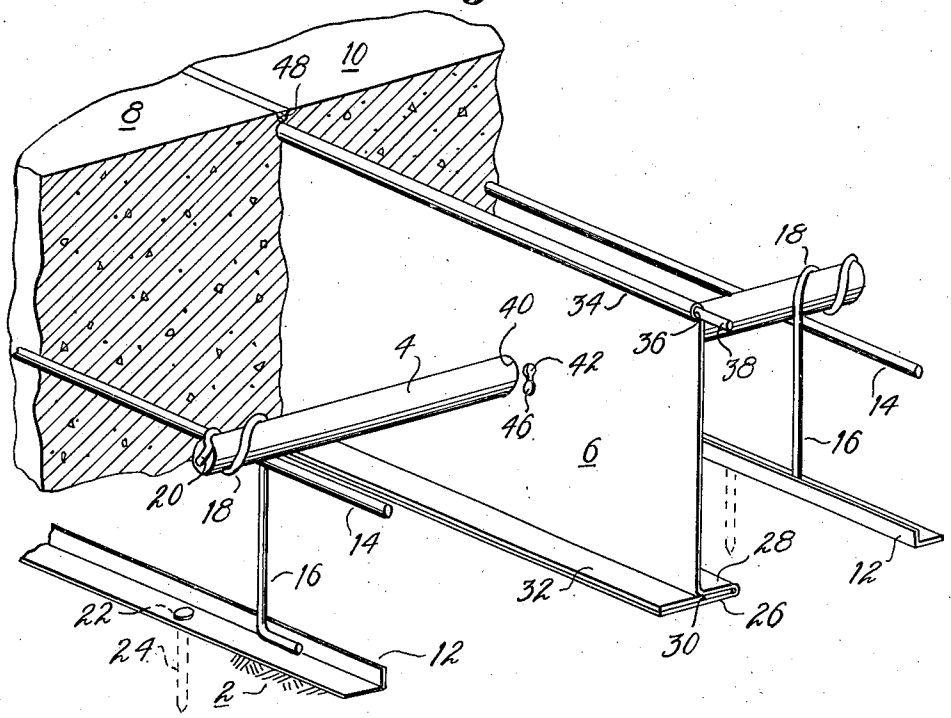


Fig. 2.

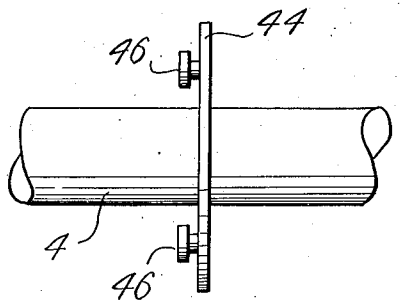
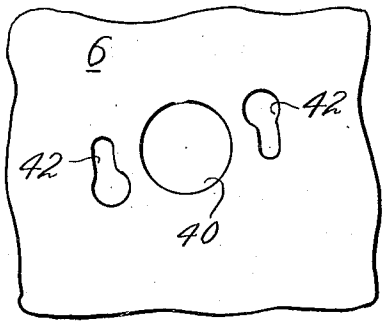


Fig. 3.



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EXPANSION AND/OR CONTRACTION JOINT ASSEMBLY

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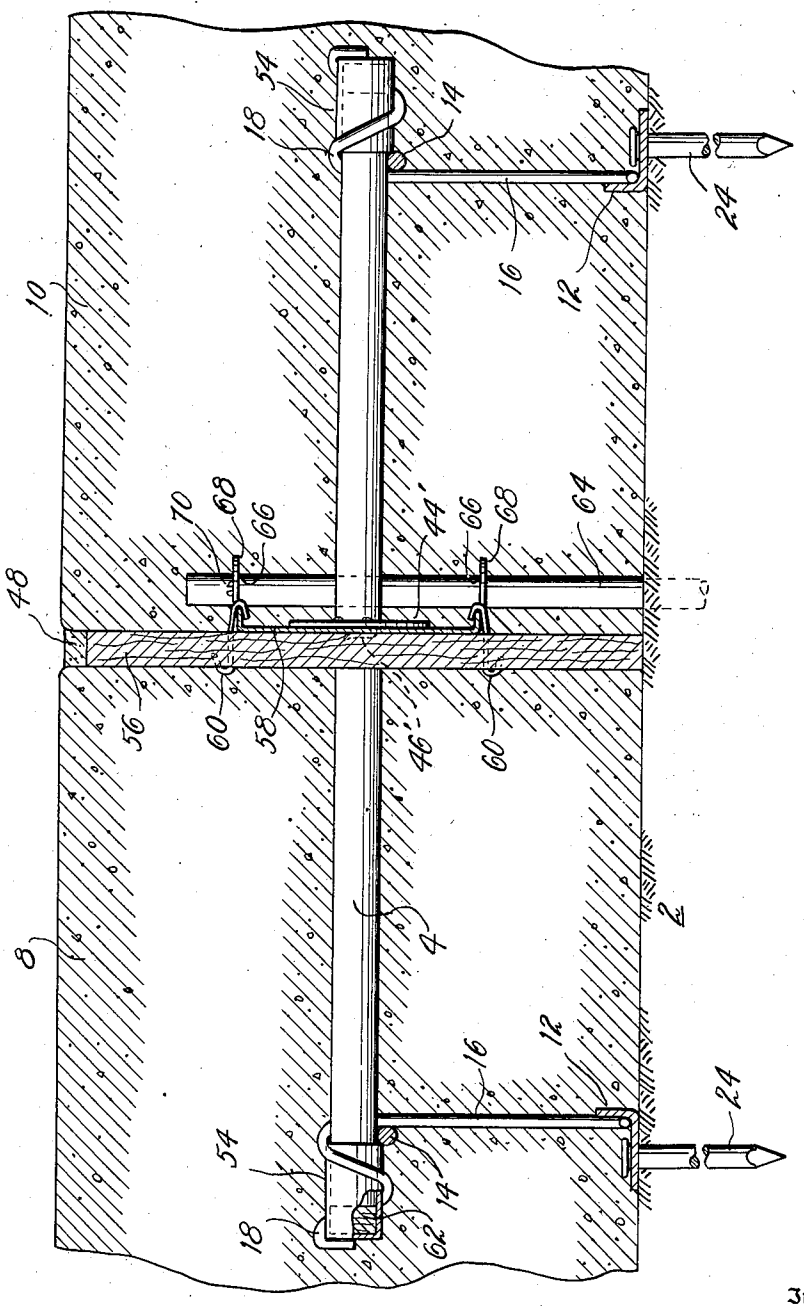


Fig. 4.

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EXPANSION AND/OR CONTRACTION JOINT ASSEMBLY

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Fig. 5.

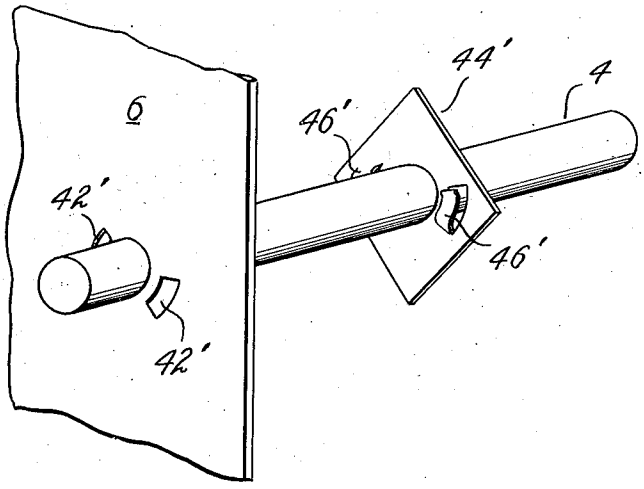


Fig. 6.

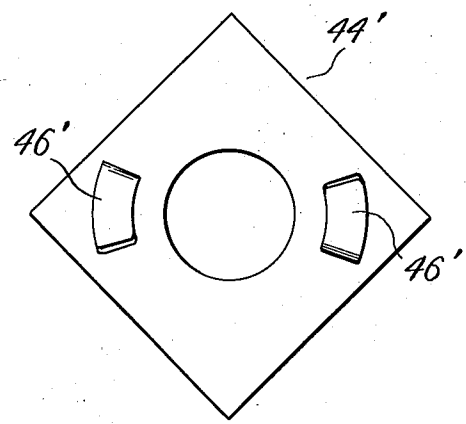
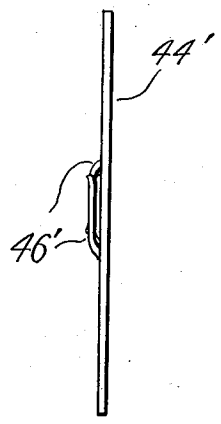


Fig. 7.



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Patented Apr. 19, 1949

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UNITED STATES PATENT OFFICE

2,467,806

EXPANSION AND/OR CONTRACTION JOINT ASSEMBLY

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Application December 12, 1946, Serial No. 715,716

2 Claims. (Cl. 94—8)

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This invention relates to an expansion and/or contraction joint assembly and more particularly to such a joint used with a center parting strip. Transverse contraction joints are assembled and pinned to the sub-grade between the forms ahead of the mixing, spreading and finishing machine. The wet concrete is dumped within the forms and the spreader machine forces it forward toward the transverse joints. In some cases it is necessary to use bulkhead plates to prevent the load carrying dowels in the joint assembly from moving out of parallelism with one another. During subsequent removal of these bulkheads the concrete around the joints may be damaged and it is therefore desirable to eliminate their use. With some types of joints used at present it is necessary to use connecting wires across the slab separation which takes place when the pavement contracts, the wires having the disadvantage of restraining this action until they finally break. It is difficult in many instances to center the dowel members with relation to the parting plate so that more of the dowel will be on one side of the joint than on the other, this decreasing the efficiency of the transload function of the joint. Surface water tends to seep through the joint into the sub-grade, this resulting in objectionable pumping of the water as traffic passes over the joint. There is also danger of water from the sub-grade infiltrating into the joint and freezing or otherwise damaging the joint. Ordinarily only one-half of the road width is poured at one time and separate transverse joint assemblies are used for each half. With joints used at present there is danger that the joint on one side of the road will not line up with that on the other.

It is an object of my invention to provide a joint which can withstand the pressure of the wet concrete without the use of bulkheads or tie wires.

Another object is to provide a joint parting member having means for excluding sub-grade infiltration and surface water seepage.

Still another object is to provide improved means of centering the joint parting member in relation to the dowel rod.

A still further object is to provide means for maintaining the joint straight for the full width of the road.

These and other objects will be more apparent after referring to the following specification and attached drawings, in which:

Figure 1 is a perspective view of my invention;

Figure 2 is a view of a detail;

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Figure 3 is an enlarged detail of a portion of the parting strip;

Figure 4 is a sectional view of the joint assembly in use in an expansion joint;

Figure 5 is a perspective view of a modification of the dowel centering means;

Figure 6 is a view of a detail of Figure 5; and

Figure 7 is an end view of Figure 6.

Referring more particularly to the drawings, the reference numeral 2 indicates the sub-grade on which the contraction joint assembly is supported. A plurality of load supporting dowels 4 are arranged in a manner to extend through a parting plate 6 between concrete slabs 8 and 10. The means for supporting the dowels 4 are the same on each side of a parting plate 6 and consists of a said plate angle 12 extending longitudinally of the parting plate 6 and a spacer rod 14 parallel to the angle 12, the angle 12 and rod 14 being connected by a vertical rod 16 at each of the dowel rods 4. The top part of the rod 16 extends away from the parting strip 6 and is arranged in the form of a helical coil 18 having a comparatively long pitch and a radial bend 20 at its outer end. The internal diameter of the coil 18 is slightly less than that of the dowel rod 4 to provide a frictional grip thereon. The lower end of the rod 16 is bent and welded to the angle 12 while the spacer rod 14 is welded to the rod 16 in a position to help support the dowel rod 4. Openings 22 are provided in the angle 12 to receive spikes 24.

The parting plate 6 is of inverted T-shape with its lower edge having a return bend 26 to provide a centered foot. The return bend 26 is spaced from the top portion 28 of the foot to provide a slot 30 for housing a non-deteriorating mastic board 32 which acts as a sealing member to prevent infiltration of water, sand or other material. The top edge of the parting plate 6 is formed into a bead 34 having an opening 36 therethrough which is of sufficient size to receive a wire 38. Midway of its height the parting plate 6 is provided with spaced apart apertures 40 for receiving the dowel rods 4. A keyhole aperture 42 is provided on opposite sides of each opening 40. At least part of the rods 4 has a washer 44 welded or otherwise securely fastened thereto at the center thereof, the washer having shoulder head rivets 46 welded thereto in spaced apart relationship.

In assembling the joint assembly the mastic board 32 is forced into the slot 30. An angle 12 with its associated structure is arranged on each side of the parting plate 6 and spaced therefrom.

The dowels 4 are inserted through the openings 40 in the parting plate 6 a short distance into the helical coils 18 and are turned until their ends abut against the stops 20. The dowels with the washers 44 welded thereto are turned until the position of the rivets 46 corresponds with keyhole apertures 42. The rivet heads are inserted through the large part of the apertures with the washer in close engagement with the plate 6, it being understood that the heads of the rivets 46 are spaced from the washers 44 a sufficient distance to permit the plate 6 to be arranged therebetween. The dowels 4 are then turned so that the rivet heads are over the small part of the slots 42, thus locking the dowels in place. This entire assembly is then carried into position between the forms and pinned to the sub-grade by driving the spikes 24 through the openings 22. It will be understood that the dowels 4 are painted and greased to permit their movement in the concrete sockets formed therearound.

Ordinarily the parting plate 6 extends only across one-half the width of the road and since the concrete is poured separately on the two sides of the road, the joint will not extend in a single plane across the full width of the road. In order to form a joint in a single plane the pin 38 is inserted into the parting strip 6 on one side of the rod and a second parting strip is moved into abutting relationship with the first parting strip and the pin 38 is inserted into the opening 36 of the second parting strip, thus forming a male and female joint between the adjacent parting plates. The concrete is then poured forming slabs 8 and 10. The edges of the slabs 8 and 10 above the parting plate 6 are tooled and filled with a mastic sealing material 48. The mastic board 32 prevents infiltration from the surface and the sub-grade.

If desired, one or both of the outboard supports for the dowels 4 may be omitted with this construction since the connection between the center plate 6 and the dowels 4 is such that the dowels are supported as well as centered therein.

A modified connection between the dowels 4 and plate 6 is shown in Figures 5 to 7. In this connection the washer 44' is provided with a pair of spring lugs 46' in place of the button head rivets 46. These lugs are received in the slots 42' in the plates 6 in the same manner as the rivets 46 are received in the slots 42.

In some instances it is desired to use a sleeve 54 around the dowel 4 in the contraction joint. This sleeve 54 is gripped within the helical coil 18 as shown in Figure 4. It is also contemplated to use the joint as an expansion joint as shown in Figure 4. In this case a joint filler 56 made of a compressible board material such as cork, redwood, impregnated felt, cornstalks, or the like, is inserted between the slabs 8 and 10. The parting strip 6 is not used, but a steel channel plate 58 extending the length of the joint is secured to the joint filler by a series of tie clips 60, thus making the joint rigid. The left hand end of dowels 4 are coated to prevent them bonding with the concrete of the slab so that the dowels move with respect to the slab as the concree expands and contracts. The plate 58 is provided with openings 40 and 42' for each of the dowels in the same

manner as shown for parting plate 6 in Figure 5. The lugs 46' on the washer 44' are received in the openings 42' to fasten the dowel 4 to the plate 58. The outboard supports for the dowels 4 are essentially the same as that described in Figure 1. The sleeve 54 is gripped within the helical coil 18 and is provided with a compressible filler 62 which is compressed by the movement of the pavement as it expands.

It is necessary to pin the joint assembly to the sub-grade to prevent it from shifting under the flow of the wet concrete. In the joint shown in Figure 4, round rod stakes 64 are used for this purpose, the stakes passing through holes 66 in washers 68 which are spot-welded to the flanges of the channel plate 58. The stakes 64 are provided with pressed ears 70 on diametrically opposite sides thereof close to the uppermost end thereof. The position of these ears is such that the stake 64 is driven into the sub-grade a substantial distance before the ears 70 come in contact with the upper washer 68. Further driving after the ears contact the upper washer tends to draw the joint assembly into closer association with the sub-grade.

While several embodiments of my invention have been shown and described, it will be apparent that other adaptations and modifications may be made without departing from the scope of the following claims.

I claim:

1. A transload device for transferring loads between adjacent slabs comprising a vertical plate, said plate having an opening therethrough, a dowel passing through said opening, said plate having a pair of spaced apart elongated apertures therein adjacent said opening, a washer fastened to said dowel midway of its length, and a pair of projections fixed to said washer, one projecting into each of said apertures to lock the dowel in place on said plate when the dowel is rotated about its axis.

2. A transload device for transferring loads between adjacent slabs comprising a vertical plate, said plate having an opening therethrough, a dowel passing through said opening, said plate having an elongated aperture therein adjacent said opening, a washer fastened to said dowel midway of its length, and a projection fixed to said washer and extending into said aperture to lock the dowel in place on said plate when the dowel is rotated about its axis.

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The following references are of record in the file of this patent:

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Certificate of Correction

Patent No. 2,467,806. April 19, 1949.

ALAN E. BRICKMAN

It is hereby certified that errors appear in the printed specification of the above numbered patent requiring correction as follows:

Column 2, line 17, for the word "said" read *sand*; column 3, line 66, for "concree" read *concrete*;

and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 20th day of September, A. D. 1949.

[SEAL]

JOE E. DANIELS,
Assistant Commissioner of Patents.