June 6, 1939. A. C. FISCHER 2,161,225

BRIDGED LOAD EXPANSION PLATE

Filed Feb. 28, 1935

Fig. 1

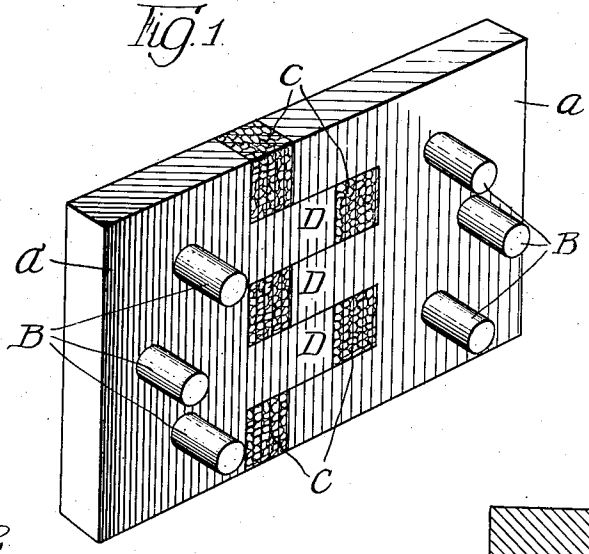


Fig. 2

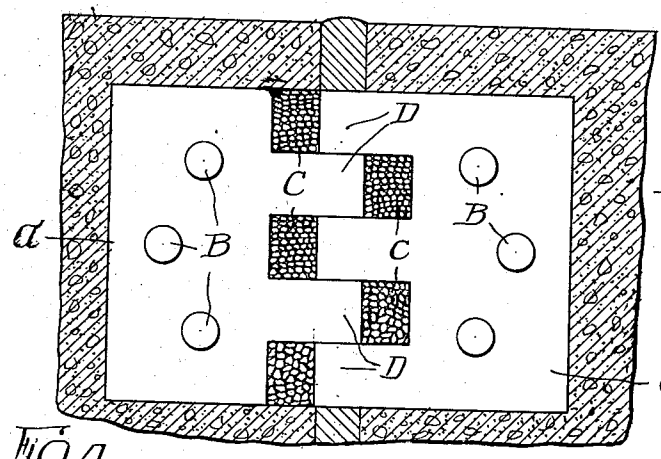


Fig. 3

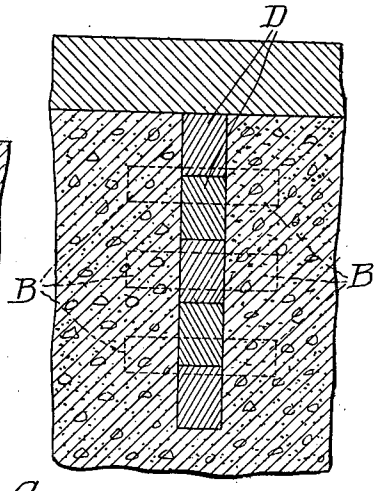


Fig. 4

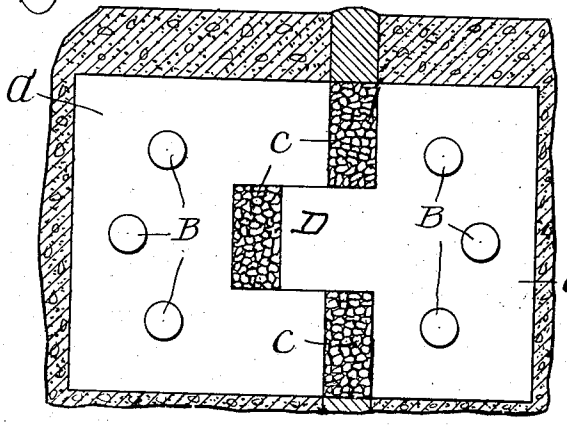
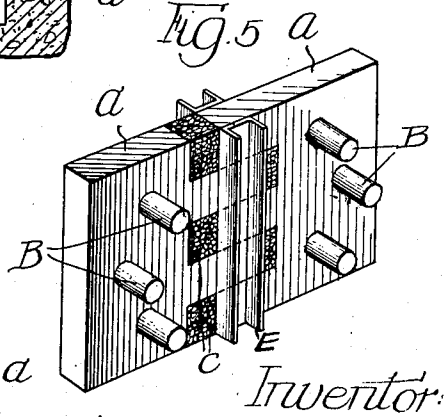


Fig. 5



Inventor:
Albert C. Fischer,
by: Knight Bros.
Attorneys.

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BRIDGED LOAD EXPANSION PLATE

Albert C. Fischer, Chicago, Ill.

Application February 28, 1935, Serial No. 8,719

8 Claims. (Cl. 94—18)

This invention relates to monolithic structures or divided structures wherever they are to be brought into bridging relation with each other, and relates to two plates designed to work in conjunction with the separate structures for the purpose of bridging a space left either for the expansion and contraction of the structures or desire to have an interslidable self-adjustable bridging means between the two structures, the motive forces being some other than that relating to expansion and contraction.

The invention accordingly consists in the features, combinations and arrangements of parts which will be exemplified in the construction hereinafter described or claimed for carrying out the above stated object and such other objects as will hereinafter appear in the description.

The aim of the present invention is to provide a slidable bridging means between monolithic slabs which are accomplished with two plates, preferably of steel anchored in the concrete. When placing the plates in position for construction they are placed in their proper relation and held apart as in the present case one inch, so as to allow play for the further movement of the bridging plates. The plates themselves through the extension resting in slidable relation so that they can move forward or backward as may be desired. The respective plates are held in position by suitable means so as to thoroughly anchor in the concrete.

To further describe my invention reference may be made to the accompanying drawing, in which:

Figure 1 represents the expansion joint bridging plates;

Figure 2 represents the bridging plates having concrete slabs separated by an expansion joint;

Figure 3 represents a cross section of the metal plates anchored in the concrete;

Figure 4 is a modification of Figure 2; and

Figure 5 represents the bridging expansion plates having mounted thereon receptacles for anchoring expansion joints.

Referring more specifically to the drawing, in Figure 1, AA represents two steel plates which are set vertically in the concrete at the point where the separation is desired. B represents lugs transversely placed through the plates in order to properly anchor the plates in the concrete. C represents sponged rubber of a dense variety, which holds apart the slidable extensions, permitting them to enter only so far in the respective plates and requiring pressure for further penetration, which pressure may be due to expansion and contraction or other motive forces.

In Figure 2, D represents extensions of the plates AA, which are slidably placed in position so they rest alternately upon other extensions, bridging the space where the expansion joint or separation is to occur.

In Figure 3, B represents the extension lugs for anchoring in the concrete, and D represents the extension fingers on the plates.

In Figure 4, which shows the use of a modification of the structure of Figure 1, one plate has one extension finger and the other plate has two extensions, the plates being represented by A, the anchoring lugs by B, the pads by C and the extension fingers by D.

Figure 5 represents plates A, anchoring lugs B, sponge rubber pads C, and expansion joint anchoring means E in which metal side plates with or without capping may be anchored to the plates to receive expansion joints running at right angles to the bridging plates.

Heretofore in transmitting pressure from one slab to the other by the use of dowel bars or other transfer means, there has been no interference with the downward motion or pressure of the slabs, with the result that they are easily disaligned, and with the result that the space left for expansion and contraction is much disrupted and disturbed by reason of such action.

On other bridged-load devices a leverage or fulcrum is attached, which is detrimental not only to the roadbed but to the effect upon the adjacent slabs. With the use of my invention the slabs are constantly bridged, but the bridging means is so accomplished that there is nothing to prevent a further deeper bridging should the forces of nature expand the slabs or permit them to grow through incomplete hydration.

During the installation of the slab the sponged rubber pads prevent the concrete finding its way between the extensions and thus interfere with the lateral movement of the bridging means. It can be readily understood that when traffic, such as heavy trucks or vehicles, press down upon one of these slabs there can be movement which is not general throughout the entire pavement because the slabs are bridged throughout the entire structure, with the result that there can be no downward depression of the slab by reason of the force of impact of the vehicular traffic. Likewise there can be movement of the slabs towards and away from one another because the extensions and plates are held in vertical alignment and must function in their proper spheres. This

structure, therefore, minimizes the continuous rupture of an expansion joint or the continuous disturbance of the separation means, which might otherwise remain quite waterproof and efficient.

It may likewise be understood that an expansion joint or a metal air cushion joint or other contrivance may be set against these plates at right angles to intersect them, and in such case it may be advisable to construct a receiving means on the side of the extension plates AA, which would consist of a metal housing without which the expansion joint or the metal air cushion joint would readily fit. However, this is a matter of convenience and the functioning of the expansion plates in nowise depend upon the use of expansion joints or air cushion joints. Should it be desirable to use these expansion plates without expansion joints a metal cover might be placed over the place provided for expansion joints, or an edging strip filled in at the surface so as to give free movement to the concrete slabs without the interference of the expansion joints. However, inasmuch as it is desirable to keep out as much water and weather as possible it is highly desirable that expansion joints be used and provided for. It can readily be understood that the load to one slab is readily carried from one slab to the other through a bridging means and that therefore the shock or dipping impact is not transforred as in the old structures, but is evenly transmitted across the division between the structures onto the succeeding structure. Other materials may be utilized instead of sponged rubber as a separating means between the extensions of the extension plates, and other materials likewise may be used for the expansion plates. The dowels extending transversely in the plates are preferably of steel and of sufficient length to obtain a firm hold on the concrete.

I do not wish to be limited to the materials out of which these expansion plates may be made nor to their employment to a specific purpose as a bridging means.

What I claim as novel and new is:

1. Expansion plates having extension fingers provided with slidably interlocking means, the plates as a load bridging means between adjacent expansion plates having anchoring devices, sponge rubber cushioning devices and guides on the sides thereof for the reception of a transverse sectional member, such as expansion joints or plates.

2. A pair of vertically disposed narrow expansion plates for concrete roads and the like adapted to be embedded in the road, said plates having a plurality of fingers separated by grooves, the grooves in alignment one above the other of one plate being adapted to receive the fingers of the other plate, said fingers fitting snugly in the respective grooves and sliding therein as the plates move towards and from one another, and a cushion of sponge rubber in each groove to exclude foreign matter therefrom although being compressible to receive a finger.

3. An expansion joint between adjacent sections of a concrete road or the like comprising vertical plates embedded in each section with the ends of the plates projecting into the space between sections, said ends having vertically spaced extension fingers alternating with superposed grooves, and said fingers fitting into the aligned opposed grooves in the plates of the adjacent sections, and a load sustaining compressible strip resting on the top extension fingers and transmitting its load thereto.

4. An expansion joint between adjacent sections of a concrete road or the like comprising vertical plates embedded in each section with the ends of the plates projecting into the space between sections, said ends having vertically spaced extension fingers alternating with superposed grooves, and said fingers fitting into grooves in the plates of the adjacent sections, and a load sustaining compressible strip resting on the top extension fingers and transmitting its load thereto, said plates, including their extension fingers, being substantially flat and of substantial thickness.

5. A pair of expansion plates for concrete roads and the like, each comprising a relatively narrow upstanding plate member adapted to be nearly completely embedded in a concrete slab, one of said plates having at least one substantially solid finger extending horizontally therefrom and the other of said plates having a groove adapted to receive said finger; said plates being adapted to slidably interlock to retain adjacent slabs in vertical alinement and the interengaging sliding surfaces of the two plates being in horizontal planes.

6. A road expansion joint construction including adjacent slabs of paving and a narrow vertically disposed metallic plate embedded in each slab; one of said plates having a substantially solid finger thereon extending into a groove in the other of said plates and engaging said groove with horizontal upper and lower surfaces whereby said plates are slidably interlocked.

7. A road expansion joint construction including adjacent slabs of paving and a narrow vertically disposed solid metallic plate embedded in each slab; one of said plates having a substantially solid finger thereon extending into a groove in the other of said plates and engaging said groove with horizontal upper and lower surfaces whereby said plates are slideably interlocked, said groove extending back into the slab in which the plate forming said groove is embedded, whereby a socket is formed for the reception of said finger, and a compressible member in said socket.

8. A road expansion joint construction including adjacent slabs of paving and a plurality of spaced pairs of narrow vertically disposed plates one embedded in each slab and rigidly anchored therein, one of said plates having a sturdy, substantially solid finger formed thereon extending into a recess in the other of said plates, slidable therein and nevertheless adapted to pass a vertically acting force from one slab to the other whereby each of said slabs aids the other in supporting a load thereon.

ALBERT C. FISCHER.

CERTIFICATE OF CORRECTION.

Patent No. 2,161,225. June 6, 1939.

ALBERT C. FISCHER.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 2, first column, line 59, claim 2, strike out the words "in alignment one above the other" and insert the same after "grooves" and before the comma in line 58, same claim; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 11th day of July, A. D. 1939.

(Seal)

Henry Van Arsdale
Acting Commissioner of Patents.