Feb. 28, 1939. C. E. ULRICH 2,148,595

METHOD OF PLACING EXPANSION JOINT FILLER

Filed Dec. 9, 1936

Fig. 1

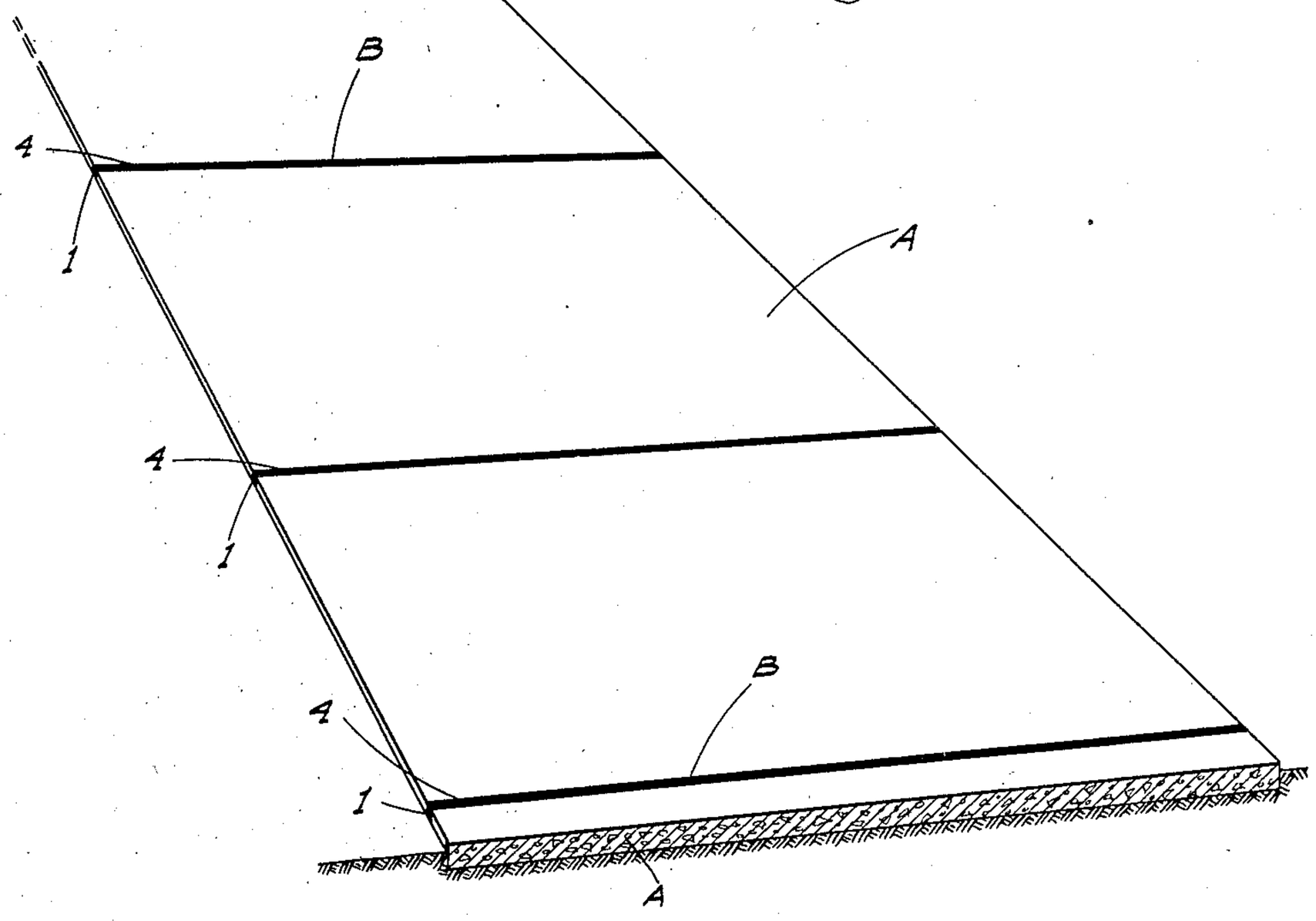


Fig. 2

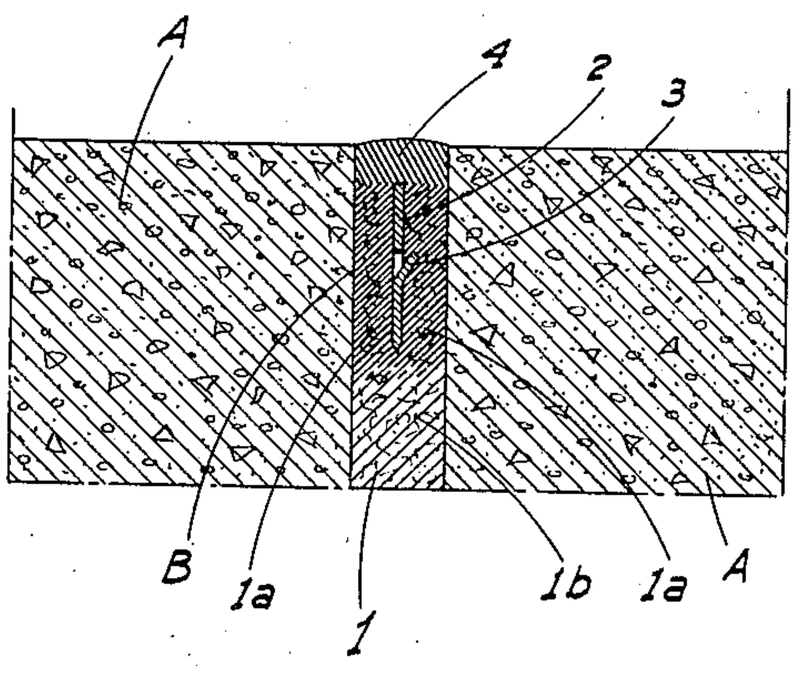
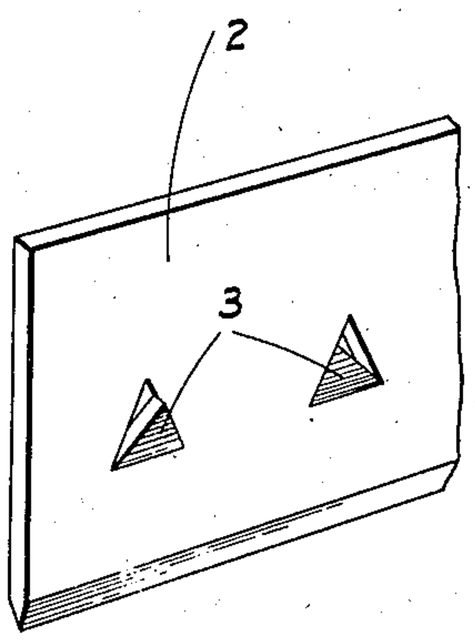


Fig. 3



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METHOD OF PLACING EXPANSION JOINT FILLER

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2 Claims. (Cl. 94—18)

This invention relates to the art of placing expansion joint filler in concrete structures such as roads, bridges, and the like. While the invention is useful with all types of joint fillers, such as those made of cork, rubber, fibre and the like, it is more particularly directed to the method of placing in situation that type of expansion joint filler which consists of a preformed fibre board impregnated with asphaltum and oil and generally referred to as a resilient joint.

The function of the expansion joint filler is to compress when two structural masses move together under the expansion of heat and to react to normal when the masses move apart under the contraction effected by reduction in temperature.

Fillers of the types referred to above have a large capacity for re-expansion or comeback after compression. However when compressed the first time they will not entirely re-expand to their full former width, but after such initial compression they will thereafter have a substantially constant compression and re-expansion capacity.

When the concrete is poured during periods of heat it will tend to set under expansion. Under these conditions it will be obvious the joint filler will not be subject to much future compressive forces. Since the joint filler is now ordinarily placed in situation in its normally expanded condition, when the structures later contract under the effect of cold, there would probably be left cracks between the ends of the structures and the joint, which cracks will fill with dirt and débris, or permit water to readily pass therethrough, thus materially lessening the efficiency of the joint filler.

A similarly bad result may attain if the concrete is poured under conditions of extreme cold. The later expansion of the structures under heat will result in extraordinary compression of the joint filler, so that its first comeback or reaction would be affected to such an extent that upon the contraction of the structures the filler would not fully react or re-expand and thus cracks would be left between the structures and filler, which might fill with dirt and débris or readily admit water and hereagain affect the future efficiency of the filler.

The primary object of the present invention is to provide a method and means to place the filler under a primary or initial compression at the time the same is placed in situation, to compensate for substantially all of the percentage of initial loss of reaction or re-expansion capacity so that when either of the above contingencies occur, the filler will have a remaining inherent resiliency sufficient to compensate for the complete movement of the structures under either condition in order to maintain the space between the structures filled so as to avoid the opening of cracks of any substantial width between the structures and joint, and thus avoid the filling in of dirt and débris, and also assist in preventing the passage of water through the joint and into the sub-grade.

A further object of the invention is to produce a simple and inexpensive device and yet one which will be exceedingly effective for the purpose for which it is designed.

These objects I accomplish by means of such structure and relative arrangement of parts as will fully appear by a perusal of the following specification and claims.

In the drawing similar characters of reference indicate corresponding parts in the several views.

Figure 1 is a perspective view of a road paving structure showing expansion joint filler set therein at predetermined distances and in accordance with the teachings of my improved method shown in detail in Figure 2.

Figure 2 is a transverse cross-sectional view of the adjacent end of the road sections showing the filler in place between the same.

Figure 3 is a perspective view of a fragmentary portion of a spreading plate.

Referring now particularly to the characters of reference in the drawing, the letter A designates the sections of the concrete which are in practice laid end to end with adjacent ends spaced apart to provide a slot B. This slot is provided to receive the expansion joint filler 1 which in connection with the use of my invention would probably be of the resilient fiberboard type although, as stated, it is possible that my method might be used with other types of filler.

My improved method comprises the interposition of spreading plates 2 into the edge of the body of the filler. These spreading plates may be in the form of one continuous plate or, as a matter of convenience in handling, they may be inserted in sections placed end to end, as shown in Figure 1. The plates are preferably of metal or other non-resilient material. The driving of these to place in the edge of the joint will place the upper portion of the filler body under an initial compression, as shown by the heavier shading 1*a* in Figure 2, as contradistinguished from its normal and initially compressed condition, as shown at 1*b*. The thickness of these plates 2 is sufficient to initially compress the filler to a degree to com-

pensate for the loss of comeback or reaction it would undergo under either of the circumstances stated in the preamble to this specification, leaving a resultant resilience sufficient to follow the movements of the structure A under the influence of heat or cold. No large cracks will therefore develop between the filler and structures, but the slot B will be maintained closed by the action of the resilient filler 1 following up the receding ends of the structures A as they retract away from each other.

The spreader plates may also be inserted in the filler after the concrete has set; or may be positioned, during maintenance, in replacement of worn out fillers. The old filler could be removed, a new filler placed in situation and the spreaders inserted to function to properly fill the joint, as herein described.

The tackiness of the asphaltum or other waterproofing material in a treated fibre joint filler might ordinarily be sufficient to hold the plates 2 in place, but to make sure that they will not become loosened, I provide engaging prongs 3 which engage the body of the filler and positively hold the plates in place, regardless of the type of filler used.

The joint filler and spacer plates may be set slightly below the crest of the structure and the interval filled with an asphalt cap 4, as shown in Figure 2.

From the foregoing description it will be readily seen that I have produced such a device as substantially fulfills the objects of the invention as set forth herein.

While this specification sets forth in detail the present and preferred construction of the device, still in practice such deviations from such detail may be resorted to as do not form a departure from the spirit of the invention, as defined by the appended claims.

Having thus described my invention, what I claim as new and useful and desire to secure by Letters Patent is:

1. That method of placing resilient joint filler between sections of structural material comprising setting the filler in place, forming a rigid structural section contiguous to each side of the filler, and then forthwith driving a non-compressible member into the upper edge of the filler to place a portion of the filler under an initial compression against the ends of the sections independently of any movement of the sections.

2. That method of constructing concrete sectional paving and like structures comprising rigid monolithic slab sections having a resilient joint filler between adjacent ends of such sections, consisting in first setting the filler in place and in substantially normal expanded condition, forming a slab section immediately against each side surface of the filler and then forthwith driving a non-resilient element into the top edge of the filler substantially along the median line between the side surfaces thereof, whereby to place a portion of the filler under an initial compression against the ends of the sections independently of any movement of the sections.

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