June 13, 1939. A. E. BRICKMAN ET AL 2,162,467

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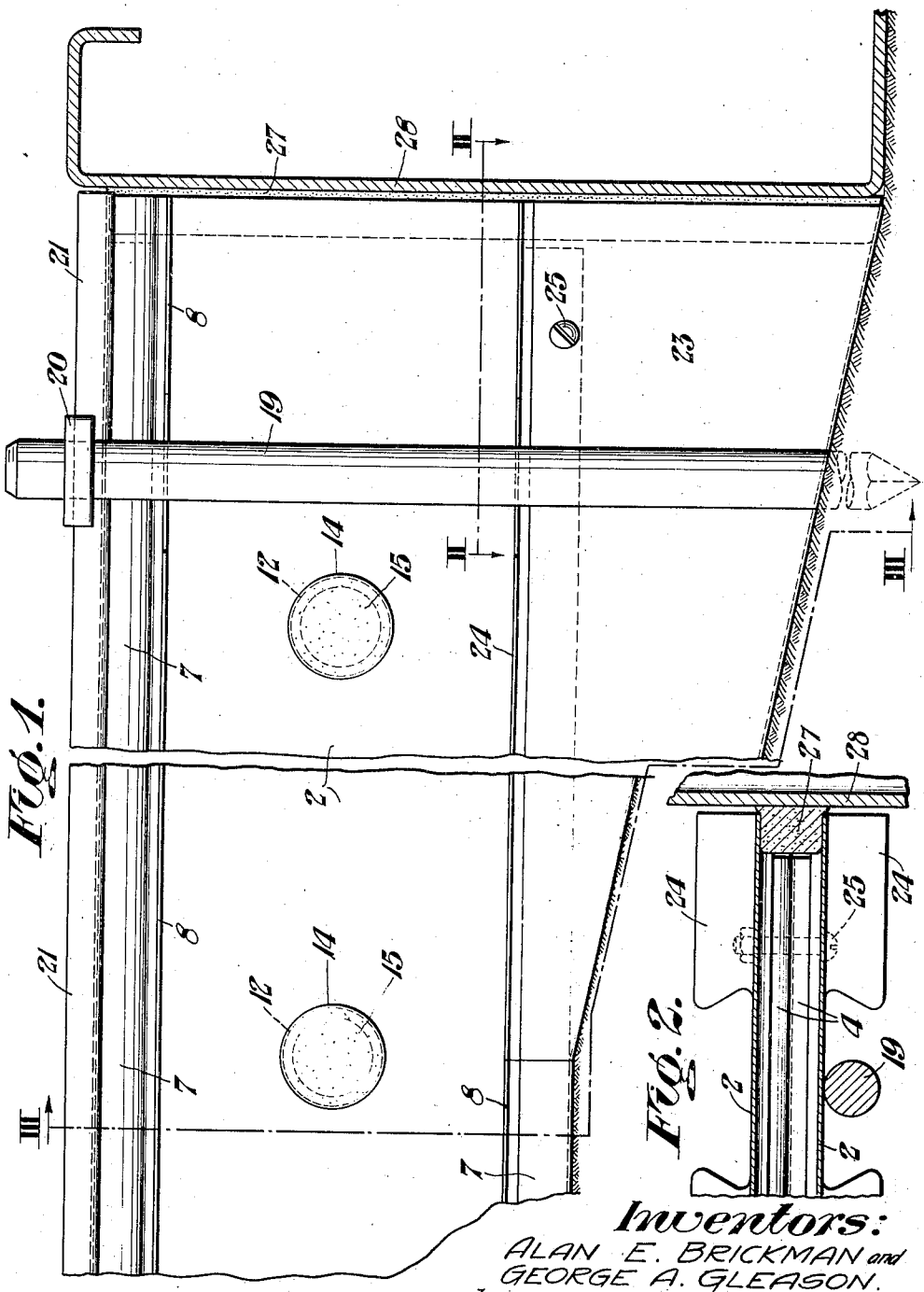


Fig. 1.

Fig. 2.

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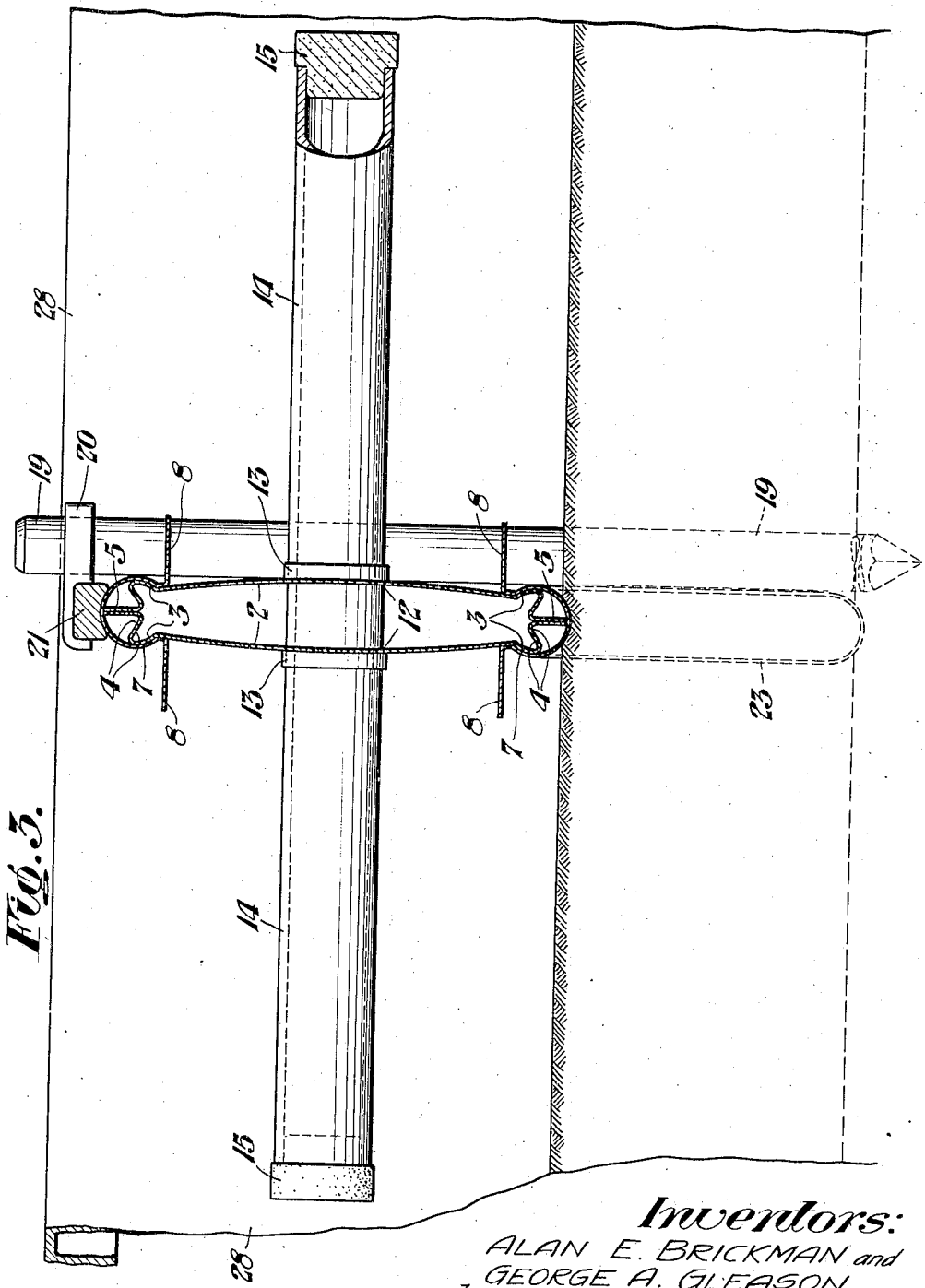


Fig. 3.

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Fig. 5.

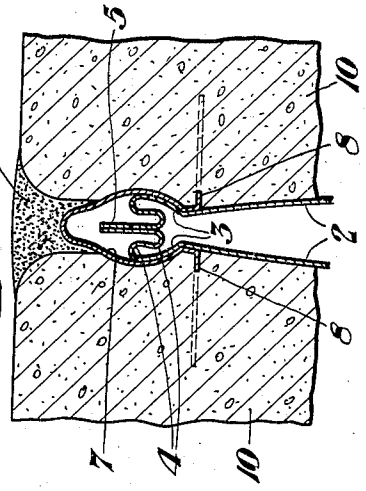


Fig. 6.

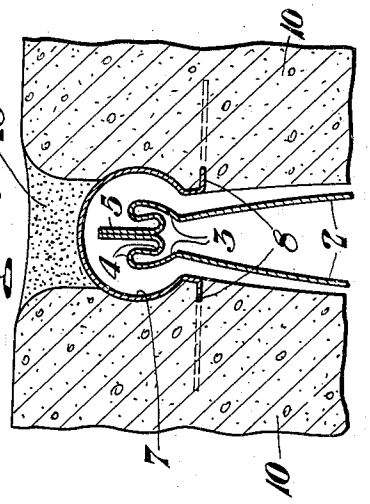
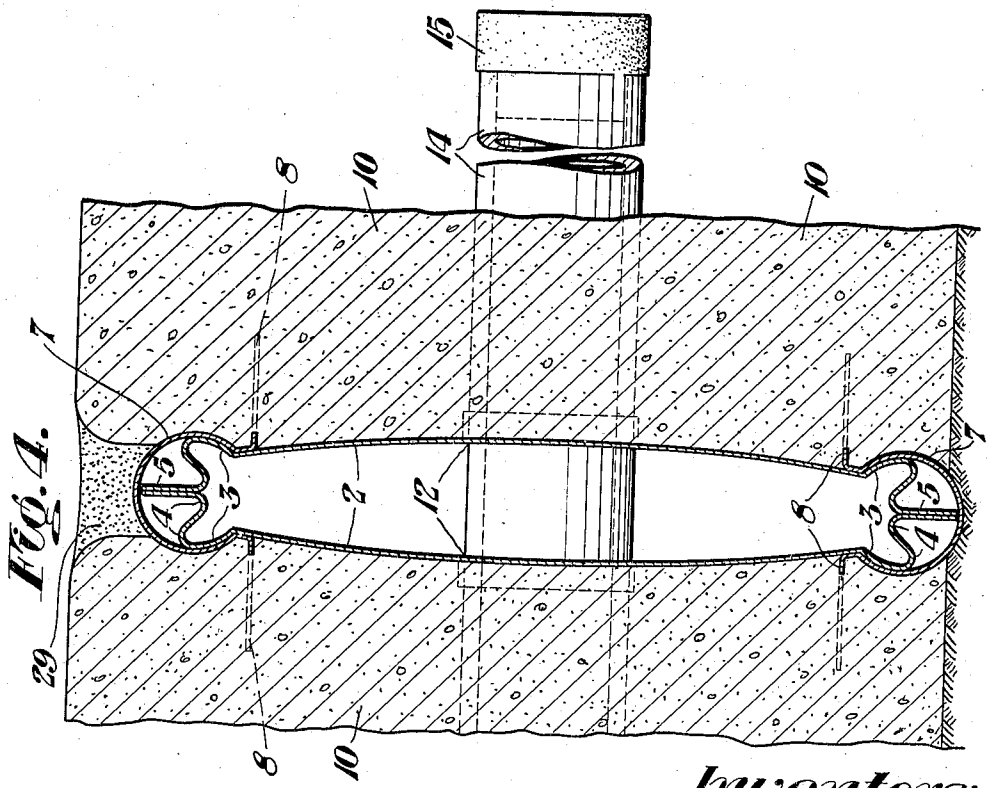


Fig. 4.



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Patented June 13, 1939 2,162,467

UNITED STATES PATENT OFFICE

2,162,467

JOINT

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Application June 13, 1936, Serial No. 85,161

2 Claims. (Cl. 94—18)

This invention relates to joints, and more particularly those which are used in concrete pavement construction to compensate for expansion and contraction due to temperature changes and change of moisture content.

In the past, many transverse expansion and contraction joints in pavement were filled with pre-molded felt or paper which is saturated with asphalt. These pre-molded bituminous fillers extruded from the pavement as the concrete sections expanded, resulting in a bumpy effect on passing vehicles. Furthermore, when the pavement contracted spaces were left on either side of the pre-molded fillers for the entrance of dirt and water. If water enters the joint, it might later freeze and damage the pavement while dirt will become packed and result in the heaving or buckling of the pavement due to lack of adequate space for expansion.

It is among the objects of the present invention to provide an efficient expansion and contraction joint for concrete pavement which will also function to transfer the load from one section of concrete to another.

The foregoing and other objects will be apparent after referring to the drawings, in which:

Figure 1 is a fragmentary side elevation of the device of the invention.

Figure 2 is a sectional view on the line II—II of Figure 1.

Figure 3 is a sectional elevation on the line III—III of Figure 1.

Figure 4 is an enlarged fragmentary sectional end view of the device after it has been completely installed.

Figures 5 and 6 are enlarged fragmentary sectional end views of the upper part of the device under contractive and expansive conditions, respectively.

Referring more particularly to the drawings, the numeral 2 designates a pair of side-wall members in the form of metallic plates. These side-wall members 2 are slightly bowed intermediate their edges and outwardly curved at points adjacent thereto, the latter being shown at 3. The edge portions of the side-wall members 2 which adjoin the outwardly curved portions 3 are reversely curved, as shown at 4, and abut at 5 in parallelism. The abutted parallel edges 5 of the side-wall members 2 are suitably connected, as by riveting or welding.

The outwardly curved portions 3, reversely curved portions 4, and abutted parallel edges 5 of the side-wall members 2 are enclosed by sleeve members 7 in the form of trough-shaped or curved strips of a suitable ductile and rust-proof metal, such as copper. The inner side-walls of these sleeve members 7 initially contact the outwardly curved portions 3 of the side-wall members 2 and carry at their edges horizontal flanges 8 which extend into the adjacent concrete sections 10.

The intermediate portions of the side-wall members 2 are provided with alined apertures 12 and short sleeve-sections 13 to receive transload doweling, which is in the form of relatively large pipes 14. These pipes 14 extend into the concrete sections 10, and are initially coated to prevent corrosion and also to form a concrete bond break to allow the relative movement of the concrete sections.

The ends of the pipes 14 are closed by suitable plugs 15 which are compressible and perform in a manner similar to voids under the movement of the concrete sections 10. When it is desirable to permit the movement of only one of the concrete sections 10, then only those ends of the pipes 14 are closed while the other ends are permitted to become filled with concrete.

When installing the device of the invention the bottom sleeve member 7 rests on the ground with the side-wall members 2 extending upwardly therefrom. The top sleeve member 7 is placed over the upper edges of the side-wall members and posts 19 are driven into the ground immediately adjacent thereto. These posts 19 support lugs 20 which hold a retaining bar 21 against the top sleeve member 7, whereby the side-wall members and sleeve members are maintained in position.

It very frequently happens that the pavement must have a thickened edge seal at the bottom, and in order to enable this construction there is provided an extension for each of the bottom sleeve members 7. These extensions, shown at 23, are trough-shaped and of tapering depth, and carry at their edges horizontal flanges 24 which extend into the bottom portions of the adjacent concrete sections 10. The open edges of each extension 23 are arranged to embrace an end of the bottom sleeve member 7 and are thus held in place by any suitable means as, for instance, the bolt and nut illustrated at 25.

The ends of the spaces provided by the assembled side-wall members 2, sleeve members 7 and extensions 23 are sealed by suitable gaskets 27 composed of rubber or other resilient material which are initially held in place by the usual paving side-forms 28. After the concrete is poured, these gaskets 27 are thereby held in place.

The gaskets 27 serve the dual purpose of sealing the ends of the joint and also providing a compressible end portion for the joint assembly to compensate for slight variations in the setting of the forms 28. The posts 19 and lugs 20 are removed before the concrete becomes hard, but the retaining bar 21 is left in position. After the concrete becomes hard the retaining bar is removed and latex 29 poured into the recess left thereby.

In Figure 5 of the drawings, we have disclosed the concrete sections 10 in expanded condition and the resultant effect on the device of the invention. As they contract to their initial positions, the side-wall members 2 will remain contracted but the sleeve members 7 will expand therewith, as shown in Figure 6, whereby the seal is preserved.

The characteristics of the copper sleeve members 7 and latex 29 permit the joint of the invention to withstand many expansion and contraction reversals.

In time, the side-wall members 2 will decompose, but the pipes 14 will remain intact to transmit loads from one concrete section to the other.

While we have shown and described one specific embodiment of our invention, it will be understood that we do not wish to be limited exactly thereto, since various modifications may be made without departing from the scope of our invention, as defined by the following claims.

We claim:

1. A trans-load expansion joint for concrete roads and the like comprising a pair of individual sheet-like side-wall members, adapted to substantially abut the ends of the adjacent sections of the road, the upper and lower edges of said individual sheet-like side-wall members being reversely curved in directions toward each other and embodying flat vertically extending end portions, the adjacent vertically extending flat end portions of said sheet-like side-wall members being connected together, sleeves for enclosing the upper and lower edges of said side-wall members including the reversely curved and vertically extending flat joined end portions thereof, flanges extending from each of said sleeves into the ends of the sections of the road, and a rigid one-piece dowel member extending through said side-wall members and into each of the adjacent sections of the road to transfer loads from one section to the other and prevent relative vertical movement thereof.

2. A trans-load expansion joint for concrete roads and the like comprising a pair of individual sheet-like side-wall members, adapted to substantially abut the ends of the adjacent sections of the road, the upper and lower edges of said individual sheet-like side-wall members being reversely curved in directions toward each other and embodying flat vertically extending end portions, the adjacent vertically extending flat end portions of said sheet-like side-wall members being connected together, sleeves for enclosing the upper and lower edges of said side-wall members including the reversely curved and vertically extending flat joined end portions thereof, flanges extending from each of said sleeves into the ends of the sections of the road, a rigid one-piece dowel member extending through said side-wall members and into each of the adjacent sections of the road to transfer loads from one section to the other and prevent relative vertical movement thereof, and a resilient member positioned in each of the sections adjacent the ends of said dowel member to permit movement of said dowel member relative to the sections during expansion and contraction of the road.

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