July 16, 1963 YOSHIKI FUJIHARA 3,097,579

JOINT SEALING DEVICE

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FIG. 1

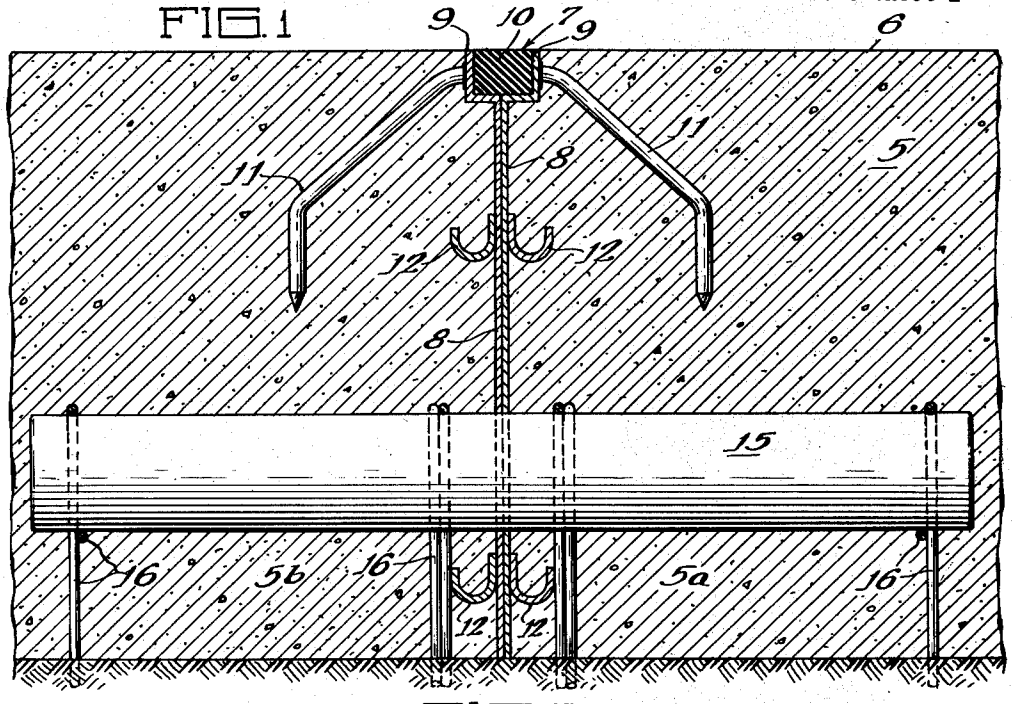
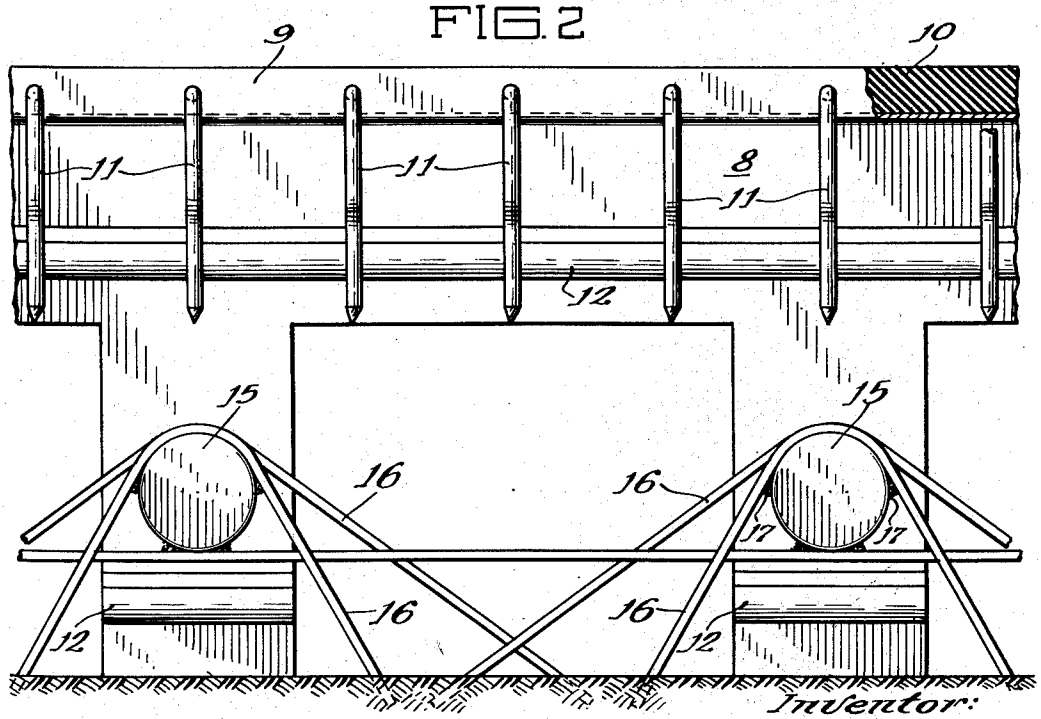


FIG. 2



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FIG. 3

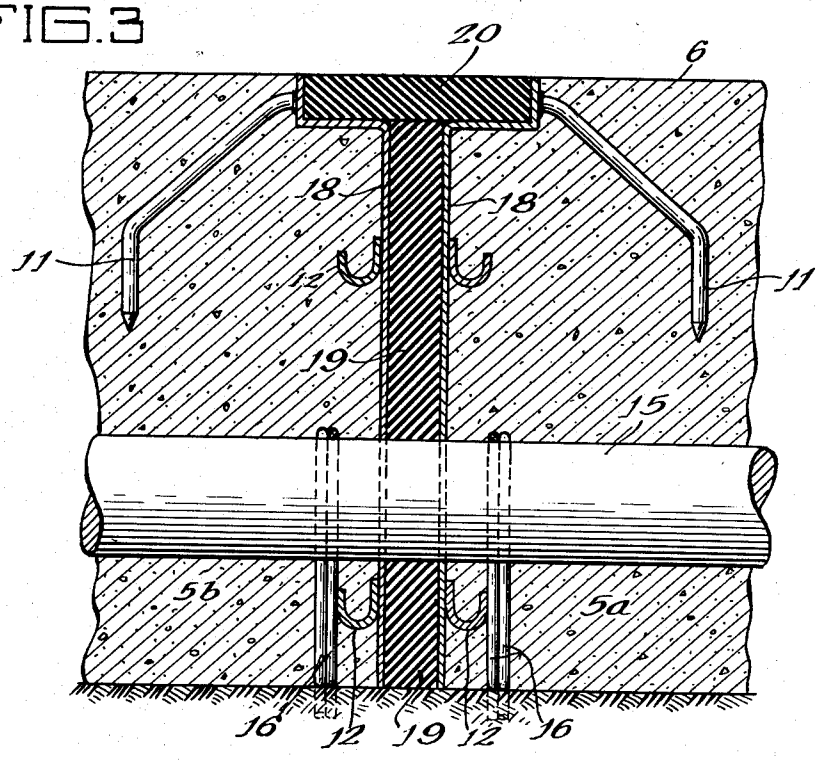
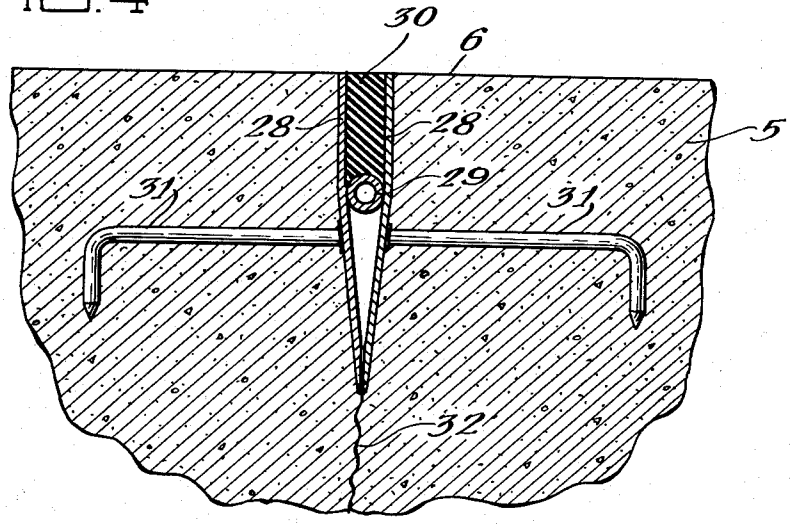


FIG. 4



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3,097,579

JOINT SEALING DEVICE

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4 Claims. (Cl. 94—18)

This invention relates to a sealing device for a masonry joint having bodies of masonry such as concrete on opposite sides of the joint.

This application is a continuation-in-part of my copending application Serial No. 737,274, filed May 23, 1958, now U.S. Patent 3,018,703.

One feature of this invention is to provide an improved sealing device for sealing a joint between a pair of concrete sections comprising a pair of relatively movable side members having one edge portion of each adapted to be located adjacent a surface of each of said sections, said edge portions being spaced apart, a resilient yieldable rubbery sealing member located substantially entirely between said edge portions and attached thereto, and means for attaching said side members to the respective concrete sections for movement therewith.

Another feature is to provide a sealing device for sealing a joint between a pair of concrete sections comprising a pair of relatively movable side members having one edge of each adapted to be located adjacent a surface of each said sections, said pair of side members being arranged in a V-shaped formation with the apex of the V normally extending downwardly between said sections short of the bottoms thereof, a resilient yieldable rubbery sealing member located substantially entirely between said edge portions and attached thereto, and means for attaching said side members to the respective concrete portions for movement therewith.

Other features and advantages of this invention will be apparent from the following description of the invention taken in conjunction with the accompanying drawings. Of the drawings:

FIG. 1 is a fragmentary vertical sectional view through a concrete mass illustrating one embodiment of the sealing device.

FIG. 2 is a fragmentary side elevational view of the sealing device only of FIG. 1.

FIG. 3 is a view similar to FIG. 1 but illustrating a second embodiment of the invention.

FIG. 4 is a view similar to FIG. 1 but showing another embodiment of the invention.

In the embodiment of FIGURES 1 and 2 there is provided a mass of concrete **5** as in a concrete road having a smooth upper surface **6**. Embedded in this concrete **5** is a sealing device **7** embodying the invention. This device includes a pair of relatively movable side members or plates **8**. Each side member **8** has an edge portion **9** which is located adjacent the smooth upper surface **6** of the concrete mass **5**. The edge portions are shaped to provide an upwardly opening cavity. The side members can be made out of metal or a rigid plastic.

A sealing member **10** is adhered between the edge portions **9**. The sealing member **10** is substantially flush with the upper surface **6** of the concrete **5**. Natural or synthetic rubbers or resins or plastics customarily used in joint seals may be used here.

A plurality of prongs **11** extend outwardly and downwardly from the upper portion of each side member **8**. These prongs are attached every few feet and secure the side members to the concrete **5**. Also attached to the side members are outwardly extending curved members **12** here in the form of troughs. These act to intercept any water that might leak down the sides.

Before pouring the concrete **5**, the sealing device **7**

is supported by a plurality of spaced circular rods **15** (dowel bars or load transfer devices) which pass through holes in the side members **8**. Each circular rod **15** is supported by wires **16** or dowel assemblies or supports which are welded to the circular rod at points **17** and extend downwardly. Thus, where the concrete structure is a road the circular rod **15** is held in place by wires **16** extending into the foundation of the road, as shown in FIG. 2.

The embodiment shown in FIGS. 1 and 2 is a contraction joint for the concrete **5**. Thus, as the concrete dries and shrinks or the side members move relatively away from each other as under low temperature conditions, the sealing device prevents any cracks from forming in the concrete. During such movement, the prongs **11** and curved members **12** cause the side members **8** to move with the particular concrete section, **5***a* or **5***b*, as these members are embedded in the concrete. The tensional forces accompanying the contraction of the concrete cause sealing member **10** to stretch, thus preventing the entry of foreign material into the joint.

In the embodiment shown in FIG. 3, the structure is quite similar to that shown in FIGS. 1 and 2, but it is an expansion joint rather than a contraction joint. Here, a conventional filler strip **19** is provided between the two relatively movable side members **18**. Thus, the side members can move toward each other during expansion of the concrete sections **5***a* and **5***b*. In this embodiment the sealing member **20** is pre-stretched before installation so that it will have less tendency to bulge upwardly during the expansion of the concrete sections.

In both the sealing devices described thus far the sealing members can be placed in position before the rest of the stucture has been secured to the road foundation and the concrete has been poured.

FIG. 4 shows another embodiment of the invention. This structure is particularly useful in concrete repair work. Here the relatively movable side members **28** are arranged in a V-shaped formation with prongs **31** attached to each side member **28**. A resilient tube-like rubbery member **29** serves as the bottom closure for the sealing member **30**.

The device of FIG. 4 may be vibrated into position after the concrete **5** has been poured and while it is still soft. On contraction the device serves to locate the crack **32** substantially beneath the device.

Having described my invention as related to the embodiments shown in the accompanying drawings, it is my intention that the invention be not limited by any of the details of description, unless otherwise specified, but rather be construed broadly with its spirit and scope as set out in the accompanying claims.

I claim:

1. A preassembled device for sealing substantially the entire length of a joint between a pair of concrete sections when said device is located in said joint, comprising: a pair of adjacent side members adapted to be located in said joint between said sections; means attached to said side members for anchoring said side members to the respective concrete sections, said side members being adapted to move away from and toward each other under the forces of contraction and expansion of said sections, each said side member having an edge portion adapted to be adjacent an outer surface of one of said sections when said device is located in said joint, said edge portions being spaced apart; and a resilient, yieldable, rubbery sealing member sealingly attached to and extending between said edge portions, said side members extending inwardly and being in substantial contact at a distance from said upper edge portions to provide support for said

side members when said side members are toward each other under the forces of said expansion.

2. A preassembled device for sealing substantially the entire length of a joint between a pair of concrete sections when said device is located in said joint, comprising: a pair of adjacent side members adapted to be located in said joint between said sections; means attached to said side members for anchoring said side members to the respective concrete sections, said side members being adapted to move away from and toward each other under the forces of contraction and expansion of said sections, each said side member having an edge portion adapted to be adjacent an outer surface of one of said sections when said device is located in said joint, said edge portions being spaced apart; and a resilient, yieldable, rubbery sealing member sealingly attached to and extending between said edge portions, said pair of side members being arranged in a generally V-shape with the apex of the V normally extending downwardly between said sections short of the bottom thereof, said side members being in contact substantially at said V apex when said side members are toward each other under the forces of said expansion.

3. A preassembled device for sealing substantially the entire length of a joint between a pair of concrete sections when said device is located in said joint, comprising: a pair of adjacent side members adapted to be located in said joint between said sections; means attached to said side members for anchoring said side members to the respective concrete sections, said side members being adapted to move away from and toward each other under the forces of contraction and expansion of said sections, each said side member having an edge portion adapted to be adjacent an outer surface of one of said sections when said device is located in said joint, said edge portions being spaced apart; a resilient, yieldable, rubbery sealing member sealingly attached to and extending between said edge portions, said side members extending inwardly; and means located at a distance from said upper

edge portions to provide support for said side members when said side members are toward each other under the forces of said expansion.

4. A preassembled sealing device for sealing substantially the entire length of a joint space between a pair of concrete sections having adjacent outer surfaces, comprising: a pair of relatively movable separable side members adapted to extend along substantially said entire length, each of said side members having an outer side surface and one edge portion of each side member being spaced from the corresponding edge portion of the other and adapted to be located adjacent one of said outer surfaces; at least one outwardly extending member upwardly concave in cross section on each said outer side surface adapted to be embedded in one of said concrete sections; a resilient, yieldable, rubbery sealing member sealingly attached between said edge portions; and means in addition to said concave members attached to said side members for anchoring said side members to the respective concrete sections for movement individually therewith.

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