May 2, 1939. H. DEWHIRST ET AL 2,156,681

SEALING STRIP

Filed June 18, 1936

Fig-1

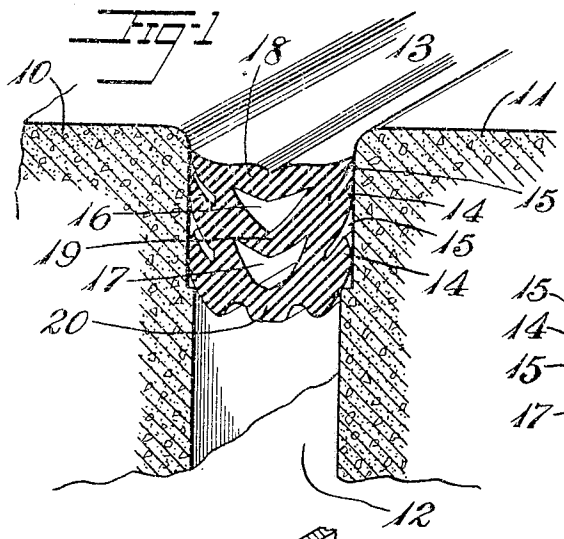
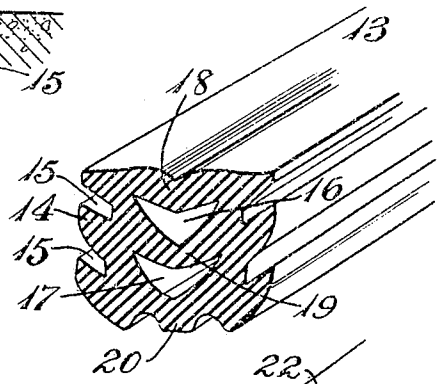


Fig-2



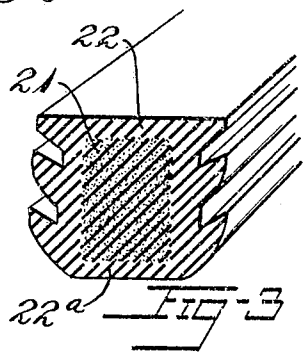


Fig-3

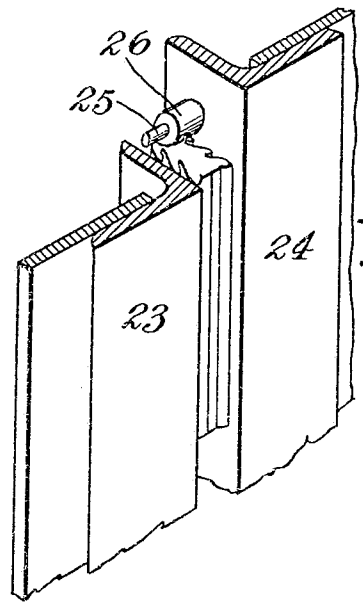


Fig-5

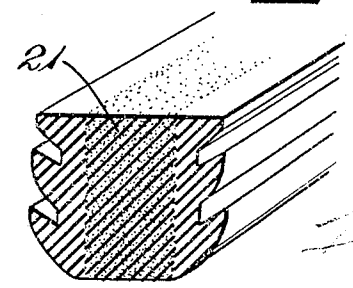


Fig-4

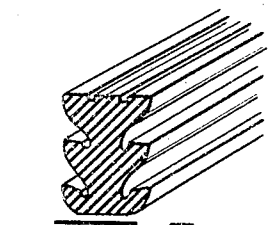


Fig-6

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SEALING STRIP

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Application June 18, 1936, Serial No. 85,901

13 Claims. (Cl. 94—18)

This invention relates to sealing strips to be used to seal the joints between rigid members subjected to expansion and contraction. The device is especially useful to seal the joints between paving or wall structures.

The principal objects of the invention are to provide efficient sealing, ease of placement, and resistance to removal.

Other objects will appear from the following description and the accompanying drawing.

Of the drawing:

Fig. 1 is a perspective view showing adjoining slabs of pavement and the sealing strip, in its preferred form, in place therebetween.

Fig. 2 is a similar view of the sealing strip alone before it is inserted in the joints.

Fig. 3 is a perspective view of a modified form of the invention.

Fig. 4 is a similar view of a further modification.

Fig. 5 is a perspective view of a joint between metal partition members showing a further modified form of the sealing member therebetween parts being broken away.

Fig. 6 is a perspective view of the sealing strip of Fig. 5.

Referring to the drawing, and first to Figs. 1 and 2, the numerals 10, 11 designate adjacent slabs of rigid paving material such as concrete, separated by a space 12 to permit expansion of the slabs. A resilient sealing strip 13, preferably of soft vulcanized rubber or material having similar physical properties, is inserted under compression between the rigid members.

This strip, in its preferred form, comprises an extensive strip of resilient material having angularly disposed parallel ribs 14 formed integrally therewith along opposite side faces thereof and separated by longitudinal grooves 15. The ribs on opposite side faces are inclined toward the exposed wearing faces of the paving slabs so as readily to be deflected toward the body of the strip when the strip is forced into the space 12, to facilitate the insertion of the strip and to act as resilient pawls against the walls of the joint space to resist movement of the strip in the reverse direction, each rib on one side of the strip in combination with the opposed rib on the opposite side and the intervening material forming in effect a bridging portion acting as a partially sprung toggle permitting movement of the strip into the joint space with low resistance to such movement but strongly resisting movement of the strip in the opposite direction, the toggle maintaining pressure against the walls by the resilience of the rubber.

While the cross-sectional contour of the inclined ribs may be varied, it is preferably such as to provide ribs which are broader at their bases than at positions remote from the body of the strip, to increase their resistance to local bending near the body of the strip while providing more flexible sealing lips at their extending margins.

While the body of the strip may be of solid soft rubber as in Figs. 5 and 6, an increased application of the toggle action of each bridging portion, comprising each opposed pair of ribs and the intervening material of the strip, with consequent reduction of central bulging of the strip toward the wearing face of the pavement, may be accomplished by relieving the solidity of the body of the strip to provide a hollow or tubular construction by longitudinal passages 16, 17, formed therethrough and dividing the body into substantially horizontal partitions or bridging portions 18, 19, 20, especially where the partitions so defined are so formed as to be somewhat V-shaped in cross-section with their concave sides toward the wear surface of the pavement. Somewhat similar results, to a lesser degree, may be accomplished by forming the center of the strip of cellular or sponge rubber 21, completely enclosed by dense rubber partitions 22, 22a, as in Fig. 3, or exposed at the upper and lower faces and only enclosed at the sides, as in Fig. 4.

While the sealing strip is primarily adapted to use between paving slabs, and for convenience has been so described, such sealing strips may be used to seal the joints between other rigid structures. In Fig. 5, such as strip is shown as inserted in a space between structural steel members 23, 24 normally held in spaced relation by bolts 25 and metal spacers 26. Such joints occur in the use of formed metal partitions for buildings, and although the dimensions of the joint space are more nearly permanent, such strips effectively seal the joint against such expansion and contraction changes as occur, and also accommodate themselves to variation in dimensional tolerance of the spaces, while the inclined rib toggle action of the strip, permits placement of the strips with slight force, while effectively resisting accidental removal of the strip.

We claim:

1. A strip for sealing the space between spaced-apart preformed walls of a pavement structure or the like, said strip comprising wall-engaging

portions and a resilient bridging portion at a face of the strip, said bridging portion being of a form, including a groove in said face, such as not to bulge substantially in the direction outwardly of the space under lateral compression of the strip.

2. A strip for sealing the space between spaced-apart preformed walls of a pavement structure or the like at a margin of the space, said strip comprising a resilient rubber bridging portion including wall-engaging margins, said bridging portion having a concave outer face and a convex inner face whereby under lateral compression of the bridging portion it will bulge in the direction inwardly rather than outwardly of the space.

3. A contraction-expansion joint for a pavement structure or the like comprising spaced-apart preformed walls defining a space therebetween open at a face of the structure, a resilient rubber sealing strip disposed in said space under lateral compression against said walls adjacent the said face of the structure, said strip comprising a tubular body having ribs on its sides resisting movement of the strip outwardly of the space by a pawl-like engagement with said walls and the outside face of the strip comprising a concave portion effective to cause bulging of said portion in the direction inwardly rather than outwardly of the space when the strip is laterally compressed.

4. A sealing strip for the space between spaced-apart preformed walls of a pavement structure or the like, said strip comprising a bridging portion of resilient rubber-like material, said bridging portion being wider than said space and of a shape such that it is adapted to be inserted into the space at a margin thereof in the form of a partly spring resilient toggle with the bending zone thereof extending into the space and the outwardly facing surface of the strip concave and with the strip maintaining sealing pressure against the said walls and resisting movement of the strip outwardly of the space by the action of the partly sprung resilient toggle.

5. A sealing strip for the space between spaced-apart preformed walls of a pavement structure or the like, said strip comprising a bridging portion of resilient rubber-like material, said bridging portion being wider than said space and of a shape such that it is adapted to be inserted into the space at a margin thereof in the form of a partly sprung resilient toggle with the bending zone thereof extending into the space and the outwardly facing surface of the strip concave and with the strip maintaining sealing pressure against the said walls and resisting movement of the strip outwardly of the space by the action of the partly sprung resilient toggle, said outwardly facing surface of the strip being concave in the relaxed condition of the strip to facilitate insertion of the strip in such partly sprung toggle form.

6. A sealing strip for the space between spaced-apart preformed walls of a pavement structure or the like, said strip comprising a bridging portion of resilient rubber-like material, said bridging portion being wider than said space and of a shape such that it is adapted to be inserted into the space at a margin thereof in the form of a partly sprung resilient toggle wtih the bending zone thereof extending into the space and the outwardly facing surface of the strip concave and with the strip maintaining sealing pressure against the said walls and resisting movement of the strip outwardly of the space by the action of the partly sprung resilient toggle, and a body portion of rubber-like material integral with said bridging portion remote from said outwardly facing surface and of a shape providing with said bridging portion a resilient-walled tubular strip.

7. A sealing strip for the space between spaced-apart preformed walls of a pavement structure or the like, said strip comprising a plurality of bridging portions of resilient rubber-like material, and a portion joining the bridging portions, said bridging portions being wider than said space and of a shape such that they are adapted to be inserted into the space at a margin thereof in the form of partly sprung resilient toggles with the bending zones thereof extending into the space and the outwardly facing surface of the strip concave and with the strip maintaining sealing pressure against the said walls and resisting movement of the strip outwardly of the space by the action of the partly sprung resilient toggles.

8. A strip for sealing the space between spaced-apart walls of a pavement structure or the like, said strip being of resilient rubber-like material and comprising a transverse bridging portion having wall engaging margins, a body portion integrally joining the bridging portion inwardly of the margins of the latter and providing with the bridging portion a tubular strip, said body portion having wall-engaging ribs at its sides of the rubber-like material, said ribs being inclined in the direction to permit insertion of the strip into said space under lateral compression against the walls and to act as resilient pawls to resist movement of the strip in the reverse direction.

9. A strip for sealing the space between spaced-apart walls of a pavement structure or the like, said strip being of resilient rubber-like material and comprising a transverse portion, body portions integral therewith at positions spaced-apart transversely of the strip and extending from the transverse portion and providing an inner space permitting movement of said body portions toward each other and inward flexure of the transverse portion upon lateral compression of the strip, such movement and flexure being resisted only by the resilience of the rubber-like material of the strip, and wall engaging ribs at the sides of the strip of the rubber-like material, said ribs being inclined in the direction to permit insertion of the strip into said space under lateral compression against the walls and to act as resilient pawls to resist movement of the strip in the reverse direction.

10. A strip for insertion between spaced-apart preformed walls of a pavement structure or the like, said strip comprising longitudinally-extending resilient ribs on its sides, the ribs tapering outwardly from their bases and being inclined in the direction to permit insertion of the strip into said space under lateral compression and to act as resilient pawls against the walls to resist movement of the strip in the reverse direction.

11. A strip for sealing the space between spaced-apart walls of a pavement structure or the like, said strip comprising a body portion and at least one longitudinally-extending rib of resilient rubber-like material on each side thereof adapted to engage the walls in sealing relation, the ribs extending outwardly from the strip and being inclined in the direction to act as resilient pawls to resist movement of the strip more strongly in one direction along the walls of the space than in the opposite direction.

12. A strip for sealing the space between

spaced-apart walls of a pavement structure or the like, said strip consisting of resilient rubber-like material and comprising at least one longitudinally-extending rib of the rubber-like material on each side thereof adapted to engage the wall in sealing relation, the ribs extending outwardly from the strip and being inclined in the direction to act as resilient pawls to resist movement of the strip more strongly in one direction along the walls of the space than in the opposite direction.

13. A strip for insertion in the space between spaced-apart preformed walls of a pavement structure or the like, under lateral compression of said strip against said walls to seal the space, said strip consisting of resilient rubber-like material and comprising at least one longitudinally-extending rib of the rubber-like material on each side thereof adapted to bear against said walls, the ribs extending outwardly from the strip and being inclined in the direction to permit insertion of the strip into said space by flexure of the ribs against the walls and to act as resilient pawls to resist movement of the strip along the walls more strongly in the direction opposite to that of insertion.

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