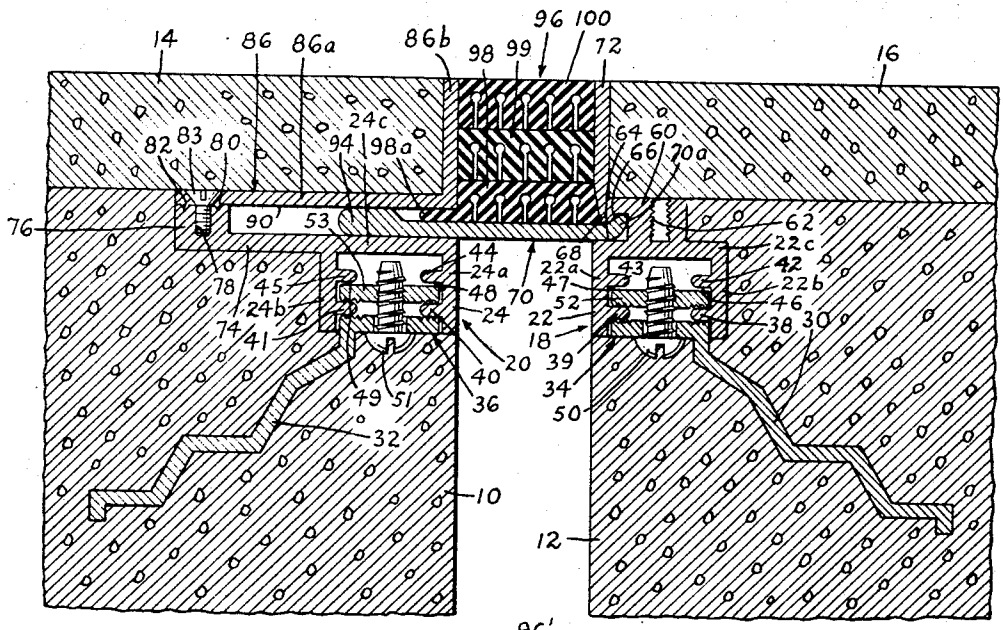
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EXPANSION JOINT FILLER

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FIG.1.



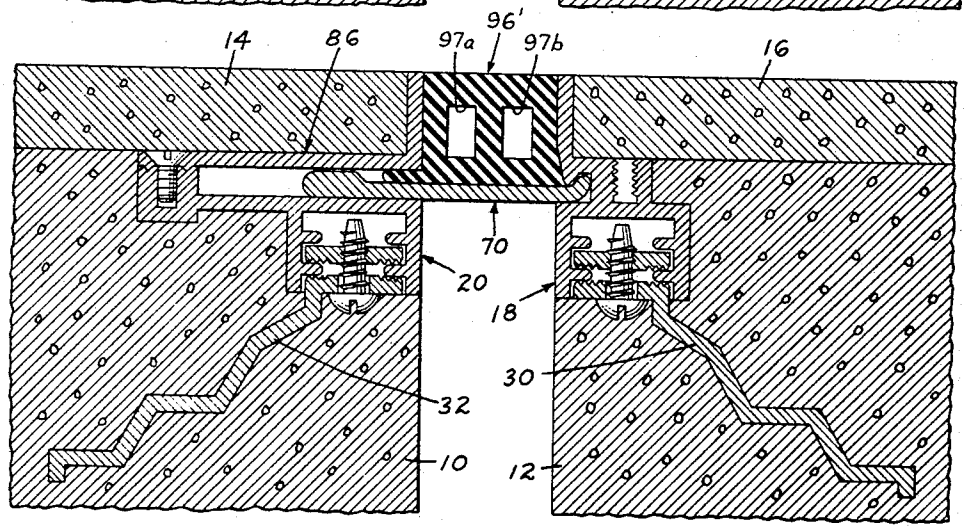


FIG.2.

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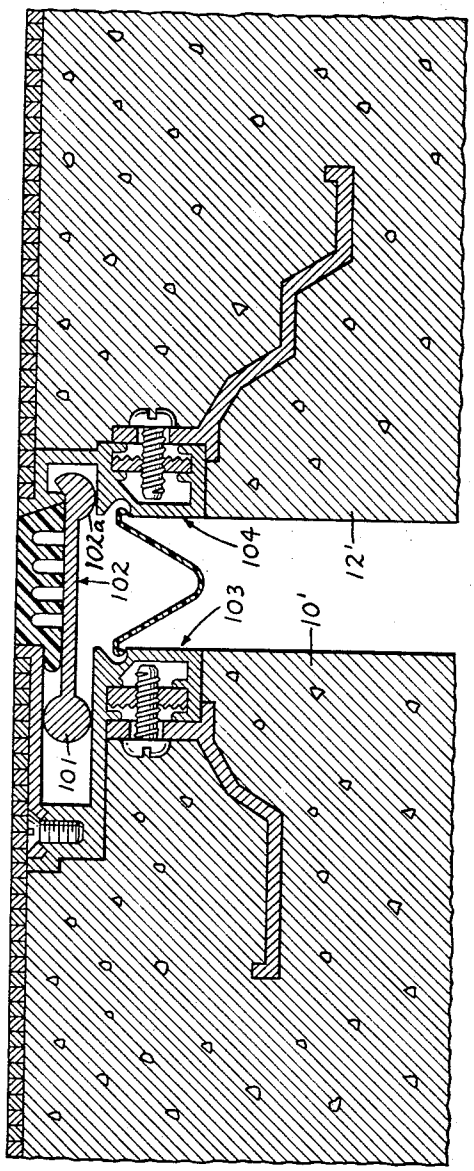


FIG. 3.

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EXPANSION JOINT FILLER

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5 Claims. (Cl. 94—18)

ABSTRACT OF THE DISCLOSURE

The expansion joint disclosed herein comprises a pair of frame members which can be attached to structural elements on opposite sides of a joint or gap therebetween one of the frame elements having an angular groove in which a flange on the edge of a bridge strip is detachably received, the other edge of the bridge strip being slidably received in a slot formed in the other frame member so that expansion and contraction of the joint enables sliding of the bridge strip in the slot while maintaining the joint covered and supporting a resilient filler member substantially flush with the surfaces of the structural elements.

This is a continuation-in-part of my United States application Ser. No. 396,945, filed Sept. 16, 1964, now abandoned.

This invention relates to construction expansion joints and, more particularly, to a novel and improved filler for the exterior exposed portion of an expansion joint provided between floor members, wall members, or similar structure elements.

In the construction of most relatively large buildings, separations between elements of the structure are provided to enable expansion and contraction of sections of the building. Often, such expansion joints occur in floors and walls of the building and require a cover or filler for the joint or crack for obvious esthetic reasons. Conventional joint covers usually include a cover plate element which is suitably anchored to an edge of one of the spaced-apart structure elements and rests on the other structure element, the cover plate generally being several inches in width and running the entire length of the joint. Thus, the cover plate, even though it may be of a relatively attractive material such as aluminum or bronze, nevertheless forms a substantial disruption in the exposed surface and significantly detracts from the appearance of the wall or floor. Moreover, many known types of joint covers or fillers are relatively expensive and are difficult to install.

In accordance with the present invention, a joint filler is provided in which only a resiliently compressible filler strip approximately the width of the joint is exposed on the surface of the structural elements, thus providing only a slight disruption in that surface and therefore being more attractive than conventional forms of joint fillers or covers. The joint filler of the invention is particularly well suited for walls or floors having surface coverings such as plaster, terrazzo, floor tile, carpeting or the like over the structural wall or floor elements. Additionally, it may be manufactured at relatively low cost, preferably being constituted entirely by elements which are extruded from plastic or from a suitable metal such as bronze or aluminum. The structure of the joint cover is such that it is easily and quickly installed.

More particularly, the construction joint filler, in accordance with the invention, comprises a frame member secured along each of the structure elements, the frame members including body portions which are spaced from the external surfaces of the structure elements such as a covering material, for example, plaster, terrazzo or floor tile or the like. The frame members are preferably secured to the structure elements by anchor clips which are in turn attached by clamping fasteners to spaced inturned ribs on the body portions, the ribs being provided on the inner faces of flanges on a body portion which is generally U-shaped in cross section.

One of the frame members has a deep slot extending the entire length of the member and lying in a plane substantially parallel to the direction of relative movement between the structural elements upon expansion and contraction. A bridge strip is secured at one edge to the other frame member, and the other edge of the bridge strip is slidably received in the deep slot. The edge of the bridge strip which is secured to the frame member includes a flange angularly related to its major surfaces and received in a correspondingly shaped slot extending longitudinally along the frame member. The deep slot receiving the other edge of the bridge plate is preferably defined between the body portion of the frame member and a separately formed member removably secured to the body portion, the bridge plate thus enabling the bridge strip to be installed after the frame members have been anchored in place, as will be described in more detail hereinafter. A resiliently compressible filler is received in the joint between the portions of the structure elements exteriorly of the frame members and is supported by the bridge strip. By shaping the bridge strip suitably, the new expansion joints can accommodate expansion and contraction or relative shifting of the structural elements in all directions.

For a better understanding of the invention, reference may be made to the following description of an exemplary embodiment, taken in conjunction with the figures of the accompanying drawing in which:

FIG. 1 is a view in section taken transversely through a floor expansion joint having the joint filler in place;

FIG. 2 is a view in section simialr to FIG. 1 but shows an alternative form of filler element in the joint filler; and

FIG. 3 is a view in section of a modified form of expansion joint embodying the invention.

The joint filler illustrated in FIG. 1 is installed in a floor expansion joint formed between a pair of spaced-apart concrete floor sections **10** and **12** having terrazzo surfaces **14** and **16**. The floor sections **10** and **12** and the terrazzo surfaces **14** and **16** are spaced apart to provide a joint of, for example, about one inch wide to enable relative movement of respective members **10** and **12** upon expansion and contraction of the respective building sections without creating undesirable stresses. Such expansion joints are commonly used in buildings and other structures and usually include load supporting interlock features (not shown).

The expansion joint filler of the invention comprises frame members **18** and **20** secured to the corner portions of the concrete floor sections and extending along the entire length of the joint. The frame members **18** and **20** both have body portions **22** and **24**, respectively, which are generally U-shaped in cross section, and the open end of the U faces away from the terrazzo surfaces **14** and **16**. One leg or flange **22***a*, **24***a* of each of the U-shaped body portions lies contiguous to the edges of the floor members **10** and **12** forming the joint.

The frame members **18** and **20** are firmly secured in the respective concrete floor members **10** and **12** by anchor clips **30** and **32** secured to the frame members at suitable intervals along their length. The anchor clips **30** and **32** are narrow strips of plastic or metal having angularly related segments and are attached to the frame members by clamp arrangements **34** and **36**. Each of the flanges or legs **22***a*, **22***b*, **24***a* and **24***b* of the frame member body portions **22** and **24** carries two parallel ribs extending in-

wardly along the entire length of the frame members. One rib **38** to **41** on each leg is spaced from the end of the leg and the other rib **42** to **45** is spaced from the first rib to define a longitudinal slot **46** to **49**. The ends of the anchor clips **30** and **32** are received against the ribs **38** to **41** and are confined within the ends of the legs **22***a*, **22***b*, **24***a* and **24***b*, and screws **50** and **51** inserted through them are threaded into clamp plates **52** and **53** carried in the slots **46** to **49**, the screws being turned down tightly to provide firm frictional engagement of the anchor clips against the ribs **38** to **41**. Firm engagement between the anchor clips and clamp plates and the respective opposite surfaces of the ribs is facilitated by forming closely spaced, small indentations which create ridges by deforming the metal at their edges upwardly from the surface.

The anchor clips **30** and **32** and the clamp plates **52** and **53** may best be made by forming continuous extrusions of suitable shape and then shearing them at suitable intervals, say about 1 in., to provide the desired width. The base **22***c* of the body portion **22** of the frame member **18** on the right in the drawing includes a boss **60** extending along its entire length, and formed in the upper surface of the boss is a longitudinally extending, continuous threaded slot **62** (extruded thread) which is provided for receiving screws from members which may desirably be attached to the joint filler. For example, if the joint is formed adjacent a wall, then an angle corner plate or the like may be connected by screws received at intervals along the threaded groove **62**. The edge of the boss **60** at the expansion joint has a slot **64** formed along the entire length of the frame member, the slot including an internal recess **66** which defines an overhang or lip **68** adjacent the upper edge of the groove **64**. The slot **64** receives one edge of a bridge strip **70**, as will be described in greater detail hereinafter.

Extending upwardly from the corner of the boss **60** and having its inner face lying in the plane of the edge of the floor member **12** is a flange **72**. The flange **72** has a height equal to that of the terrazzo surfacing **16** on the floor member.

The frame member **20** secured to the floor member **10** shown to the left in the drawing includes a laterally extending flange **74** lying in substantially the same plane as the base **24***c* of the U-shaped body portion **24** and extending along the entire length of the frame member. Formed along the end of the flange **74** is a rib **76** having a continuous threaded slot **78** (extruded thread) and a pair of locating grooves **80** and **82** formed in its upper surface. Attached to the rib by screws **83** received at suitable intervals in the threaded slot **78** is a generally L-shaped member **86**. The leg **86***a* of the member **86** lies parallel to the base **24***c* of the body member **24** and the flange **74**, thereby defining a longitudinal slot **90** in the frame member **20**. The leg **86***b* of the L-shaped member **86** lies generally in the plane of the edge of the floor member **10** and has a height equal to the depth of the terrazzo layer **14**.

The bridge strip **70** referred to above extends substantially the entire length of the joint and spans the space between the floor members **10** and **12**. The bridge strip **70** includes an angular edge **70***a* which is received in the recess **66** of the slot **64** and which serves to lock the bridge strip **70** onto the frame member **18**. The opposite longitudinal edge of the strip **70** includes an enlarged bead **94** of slightly lesser thickness than that of the slot **90** of the frame member **20** and is slidably received in the slot **90**.

The upper surface of the bridge strips **70** supports a resiliently compressible insert **96** received between the flange **72** of the frame member **18** and the leg **86***b* of the cover member **86**. In the illustrated embodiment, the insert **96** is built up of three relatively thin strips, **98**, **99**, and **100**, each of which has a series of longitudinally extending grooves formed in its lower surface. The strips may be of any suitable material, though a low density polyvinyl chloride is preferred for its durability.

The lower filler strip **98** includes a laterally extending flange **98***a* which is received in the space left in the slot between the leg **86***a* of the member **86** and the surface of the bridge plate **70**. Additionally, the right edge of the filler strip **98**, as shown in the drawing, is angularly related to the major surfaces and bears against a correspondingly angular portion formed at the lower edge of the flange **72**. The strip is thereby held firmly in place in the joint. The upper two filler strips **99** and **100** may be fastened to the respective elements below it by a suitable adhesive. The filler strip **96** may, of course, also be a single compressible element. For example, an insert **96'** formed with two or more internal spaced-apart longitudinally extending channels **97***a* and **97***b* of rectangular or other suitable shape in section as shown in FIG. 2 may be used with equal or better results.

The frame members **18** and **20**, the L-shaped member **86** and the bridge strip **70** may all be formed of a suitable plastic or of metal, such as aluminum or of bronze, by extrusion. Continuous extrusions may be cut to the desired lengths and the anchor clips then connected at suitable intervals.

The expansion joint filler is installed by first attaching the frame members **18** and **20** to the edge forms of the floor members **10** and **12** before they are poured. The frame members are then embedded in the floor members **10** and **12** when the concrete is poured. At a suitable time before the terrazzo flooring **14** and **16** is placed, the bridge strip **70** is installed by placing its angular end at the entrance to the groove **66** with the strip at an angle to the plane of the joint and then sliding the plate into place so that its lower surface bears against the base **24***c* of the body portion **24** of the left frame member **20**. The filler strip **96** is then laid down in the bridge strip, and, finally, the L-shaped member **86** is then put in place fitting the small ribs into the corresponding grooves of the boss **76** and then fastened by screws **83** to the rib **76**.

In use, the expansion of the floor members **10** and **12** which causes the ends to move toward each other also causes the bead **94** of the bridge strip **70** to slide further into the slot **90**, the right edge of the strip **70** being fixedly secured to the frame member **18**. Accordingly, the slot **90** is formed to a depth sufficient to permit the boss **94** to be received therein when the floor members **10** and **12** are at their closest approach.

The expansion joint shown in FIG. 3 is similar to the expansion joint shown in FIG. 1 except that the bead **101** on the bridge strip **102** is cylindrical in shape and the locking edge has a semi-cylindrical under-surface **102***a*. With a cylindrical bead **101** and a semi-cylindrical surface **102***a*, the bridge strip **102** can tilt if one of the structures **10'** or **12'** rises above or subsides below the other without stressing either the bridge strip or the frame members **103** and **104** which correspond to the frame members **18** and **20** of the joint shown in FIG. 1.

It will be observed that the finished floor joint, as illustrated in the drawing, includes only a relatively narrow exposed portion constituted by the filler strip and the respective ends of the flange **72** and the leg **86***b*, or the corresponding portions of the frame members **103** and **104**. All of the other structure of the expansion joint filler of the invention are recessed below the floor covering or in the case of a wall joint, the wall covering, such as plaster, thereby providing a relatively attractive joint. The resilient filler strip provides little restriction upon the relative movement of the structure elements and yet effectively prevents the intrusion of dirt or water into the joint. As described above, the procedure for installation of the expansion joint filler is highly efficient and well adapted to usual construction techniques and is accomplished with a minimum of labor, thereby enabling reduction in installation costs. Moreover, the cost of the joint filler is moderate because all of the elements, except the

screws, are extruded and require no special fabrication, except for cutting to length. The basic parts of the filler, the frame sections, are suitable for use in almost any construction joint without modification. Various wall or floor cover thicknesses may be provided for by varying the height of the flange **72** or **104** in the fabrication. For joints of varying widths, the bridge strips may be formed in various widths and supplied with the standard frame members, as well as varying widths and thicknesses of fillers. Similarly, the L-shaped members **86** and the corresponding portions of the frame member **103** may be made in several sizes to accommodate the particular floor or wall covering.

It will be understood that the above-described embodiment is merely exemplary and that those skilled in the art may make many variations and modifications without departing from the spirit and scope of the invention. All such modifications and variations are intended to be within the scope of the invention as defined in the appended claims.

I claim:

1. A construction joint filler for closing up the surface part of an elongated expansion joint between a pair of spaced-apart structure elements having external surfaces and oppositely disposed substantially parallel wall portions forming the joint comprising first and second frame members extending along and secured to respective structure elements, each of said frame members having a body portion spaced below the external surface of the structure elements, said body portion having a surface generally contiguous to the oppositely facing walls forming the joint, said first frame member having a removable outer wall nearest the external surface of said structure element, and a substantially parallel inner wall defining a longitudinally extending slot between said walls in a plane substantially parallel to the direction of relative movement of the structure elements upon expansion or contraction thereof, said second frame member having a longitudinally extending locking groove formed therein, said locking groove including angularly related portions, an elongated bridge strip having an angularly related flange portion extending along one edge thereof and detachably received in said locking groove and an opposite longitudinal edge slidably received in said slot in said first frame member, and a resiliently compressible filler strip supported on said bridge strip between said frame members and extending outwardly to about said external surfaces of said structure elements.

2. A construction joint filler according to claim **1** wherein said frame members have longitudinally extending flanges thereon having parallel surfaces facing each other and lying generally in the planes of the respective facing walls of the structure elements and outermost ends lying flush with the external surfaces of the structure elements.

3. A construction joint filler according to claim **1** wherein said bridge strip includes a longitudinally extending portion intermediate the longitudinal edges having a thickness substantially less than the width of said slot in said first frame member, and said filler strip has a flange along one edge received between said reduced thickness portion and said outer wall of said slot, whereby said filler strip is retained in said joint.

4. A construction joint filler for closing up the surface part of an elongated expansion joint between a pair of spaced-apart structure elements having external surfaces and oppositely disposed substantially parallel wall portions forming the joint comprising first and second frame members extending along and secured to respective structure elements, each of said frame members having a body portion spaced below the external surface of the structure elements, said body portion having a surface generally contiguous to the oppositely facing walls forming the joint, said first frame member having a longitudinally extending slot formed therein in a plane substantially parallel to the direction of relative movement of the structure elements upon expansion or contraction thereof, said second frame member having a longitudinally extending locking groove formed therein, said locking groove including angularly related portions, an elongated bridge strip having one angularly related portion extending along one edge thereof and detachably received in said locking groove and an opposite longitudinal edge slidably received in said slot in said first frame member, a substantially cylindrical bead extending along said opposite edge and slidably and rockably received in said slot, and a resiliently compressible filler strip supported on said bridge strip between the oppositely facing walls of the structure elements and adjacent the external surfaces thereof.

5. A construction joint filler for closing up the surface part of an elongated expansion joint between a pair of spaced-apart structure elements having external surfaces and oppositely disposed substantially parallel wall portions forming the joint comprising first and second frame members extending along and secured to respective structure elements, each of said frame members having a body portion spaced below the external surface of the structure elements, said body portion having a surface generally contiguous to the oppositely facing walls forming the joint, said first frame member having a longitudally extending slot formed therein in a plane substantially parallel to the direction of relative movement of the structure elements upon expansion or contraction thereof, said second frame member having a longitudinally extending locking groove formed therein, said locking groove including angularly related portions, an elongated bridge strip having one angularly related portion extending along one edge thereof and detachably received in said locking groove and an opposite longitudinal edge slidably received in said slot in said first frame member, said body portion being generally U-shaped in cross section, having a base and spaced-apart flanges along the edges of said base, the open end of said U-shaped body portion facing away from the surfaces of the respective structure elements, said flanges of said body portion having longitudinally inwardly extending ribs, a plurality of anchor clips received at longitudinally spaced-apart locations in the structure elements, clamping means securing said anchor clips to said frame members by engagement with said ribs on said U-shaped body portion, and a resiliently compressible filler strip supported on said bridge strip between the oppositely facing walls of the structure elements and adjacent the external surfaces thereof.

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