

[54] ELASTIC GAP SEALING DEVICE

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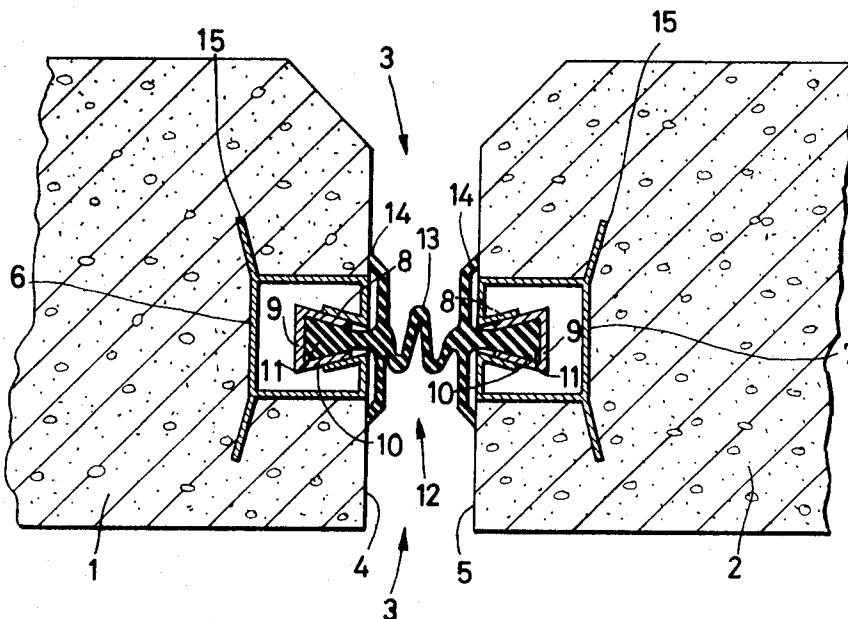
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[57] ABSTRACT

The present sealing device is adapted for sealing gaps between adjacent structural members especially pre-fabricated concrete components. The present device includes a sealing strip of elastic material such as rubber having two lateral strips interconnected by a bridging strip with longitudinal folds in the bridging strip. The lateral strips have a wedge shape with the narrower portion of the wedge adjacent to the bridging strip and with the wider portion of the wedge remote from the bridging strip. The wedge shaped lateral strips are pressed into a U-shaped rail of rigid material such as steel, whereby inwardly inclined legs of the rail tightly grip the wedge shaped contour of the respective lateral strip.

4 Claims, 2 Drawing Figures



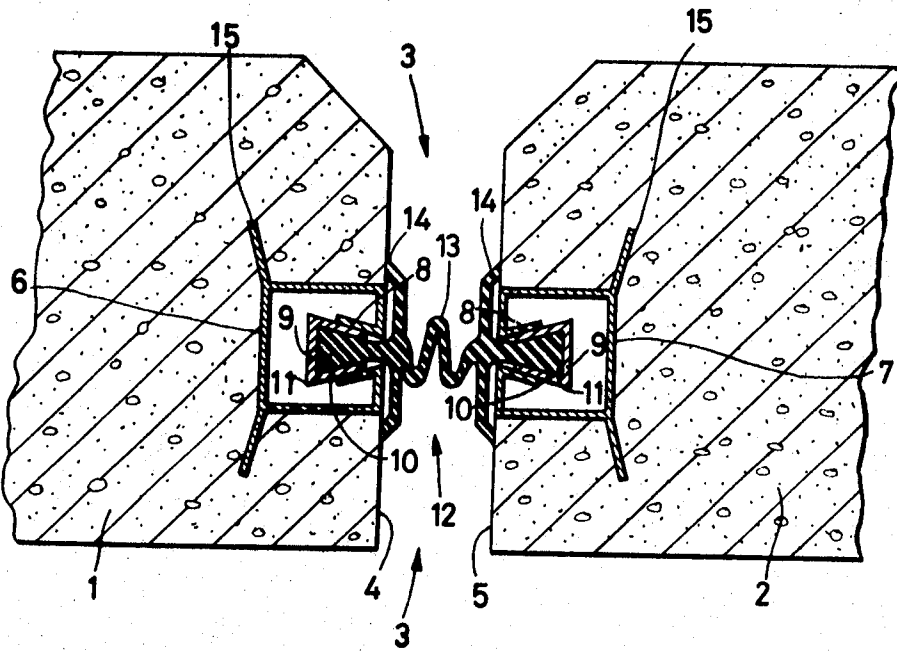


FIG. 1

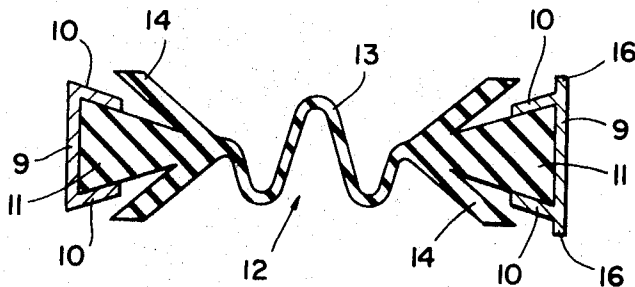


FIG. 2

ELASTIC GAP SEALING DEVICE

BACKGROUND OF THE INVENTION

The present invention relates to elastic gap sealing devices or sections for sealing gaps between adjacent structural members, especially in buildings made of pre-fabricated concrete components.

Prior art sealing devices of the above type with lateral sealing strips interconnected by a longitudinal bridging strip including folds extending in parallel to the length of the gap, are adapted for insertion into rails embedded into the walls defining the gap subsequent to such embedding. In other words, the rails are embedded into the lateral walls of the concrete building components during the fabrication of these components. These embedded rails are made of polyvinyl chloride sections and make it rather difficult to insert the sealing strips due to the relatively large surface contacts between the lateral strip portions of the elastic sealing strip sections and the rail sections. Thus, heretofore, it was necessary to provide for relatively large tolerances in order to accomplish the insertion, whereby it was not possible to avoid leaks altogether.

Another disadvantage of prior art sealing devices is seen in that it is virtually impossible to replace the sealing strips after the sections thereof have been destroyed due to any mechanical or chemical wear and tear. In any event, if repair is possible, it can be done only under substantial difficulties.

OBJECTS OF THE INVENTION

In view of the foregoing it is the aim of the invention to accomplish the following objects singly or in combination:

- to avoid the above outlined drawbacks of the prior art, more specifically, to facilitate the installation while maintaining tolerances between cooperating elements in the sealing device which tolerances will assure a reliable sealing even over prolonged periods of time;
- to facilitate the repair or replacement of worn out sealing strips;
- to provide a sealing device which is simple in its structure and accordingly, inexpensive to manufacture;
- to provide a sealing device with deflecting means therein for guiding any seepage in a desired direction and thereby preventing the seepage from penetrating the sealing device; and
- to provide a sealing device wherein the lateral sealing strips are inserted into U-shaped rails even prior to the installation of the sealing device in a gap.

SUMMARY OF THE INVENTION

According to the invention there is provided an elastic sealing device including lateral sealing strips interconnected by a bridging strip having folds therein extending longitudinally relative to the length of the gap to be sealed wherein the lateral sealing strips have cross sections of a width which increases from said bridging strip outwardly, said lateral strips being clamped in U-shaped rails wherein the lateral strips have wedge shaped outer contours which are pressed into the space between legs of the U-shaped rails which legs are inwardly inclined toward each other and which rails are made of rigid materials, wherein the outer surfaces of said rail legs rest on moldings of correspondingly angu-

lar shape to complement said wedge shaped contour, and wherein the moldings form part of a box section inserted or embedded in a respective groove in the wall forming said gap.

The structure of a sealing device as taught by the present invention facilitates the installation of the elastic sealing device due to the rails which are pressed onto the lateral sealing strips because these rails, which for example, may be made of steel or aluminum have a low friction coefficient and thus are capable of smoothly gliding along the moldings of the box sections which moldings are made, for example, of hard polyvinyl chloride.

BRIEF FIGURE DESCRIPTION

In order that the invention may be clearly understood, it will now be described by way of example, with reference to the accompanying drawings, wherein:

FIG. 1 is a sectional view through the present sealing device in its condition installed in a gap between two structural concrete components; and

FIG. 2 is a sectional view through a sealing device according to the invention prior to its installation.

DETAILED DESCRIPTION OF EXAMPLE EMBODIMENTS

Referring to FIG. 1, there are shown structural concrete components 1 and 2 having respective end walls 4 and 5 which define a gap 3 between these concrete components 1 and 2.

In each end wall 4 and 5 there is provided a groove in which is embedded a box section 6 and 7 respectively. These box sections may be made of high quality rust proof steel, aluminum or preferably of hard polyvinyl chloride or any other material suitable for the purpose. The box sections 6 and 7 are provided with moldings 8 having a pointed cross section which points inwardly relative to the respective box. These moldings are arranged opposite each other in order to receive therebetween a U-sectional rail 9, preferably made of aluminum which is provided with legs 10 inclined inwardly or rather toward each other to provide a wedge shaped space between these legs of the rails 9.

The sealing device 12 comprises two lateral sealing strips 11 interconnected by a bridging strip 13. The elastic sealing device 12 may be made, for example, of rubber or any suitable elastomeric material. The bridging portion 13 includes folds extending longitudinally of the gap 3. The lateral sealing strips have a wedge shaped cross section whereby the sealing strip portion adjacent to the intermediate or bridging strip 13 has a narrower width than the outward portion of the lateral strips whereby said width is measured in a direction perpendicularly to the length of the lateral sealing strips 11. These sealing strips 11 are pressed into the space between the legs 10 of the U-shaped rails 9.

In order to completely cover the groove opening in the end walls 4 and 5, the sealing device is provided with cross pieces 14 arranged between the lateral strips 11 and the bridging strip 13. Each cross piece 14 has two legs, one on each side of the bridging strip 13. The total length of the two legs of a cross piece adjacent to a groove is longer than the width of the groove in order to properly cover the adjacent groove. In this connection reference is made to FIG. 2 wherein the sealing device is shown prior to its installation in a gap. It will be noted that the legs of the cross pieces 14 are inclined

relative to each other so as to include preferably an acute angle in such a manner that the inclined cross pieces point toward each other prior to installation. This feature of the invention has the advantage that subsequent to the installation the legs of the cross pieces will snugly press against the end walls of the structural members under a biasing force which is inherent in the elastic material of which the lateral strips 11 and the cross pieces 14 are made. This biasing force is sufficient to assure a good seal even under conditions where the gap width increases extremely.

In addition to the just described snug and flush contact between the inner surfaces of the cross pieces 14 under the biasing pressure, the present invention provides a further sealing feature between the lateral strips 11 and the U-shaped rails 9 because the inwardly inclined legs 10 of these rails 9 guide any seepage in a drained direction, preferably downwardly. This effect may even be enhanced by providing the rails 9 with extension edges 16 which protrude outside the land interconnecting the inwardly inclined legs 10 of the rails 9. This embodiment is illustrated in the right hand portion of FIG. 2. These extension edges 16 completely prevent that any seepage may wnder around the sealing device from one side thereof to the other side.

The installation of the sealing device 12 is accomplished in that first the U-shaped rails 9, for example, made of aluminum are pressed onto the lateral edges 11 to form an integral structure as shown in FIG. 2. The lateral sealing strips 11 with the rails 9 attached thereto are then pressed into the respective groove. In this connection it should be noted that the outer width of the rails 9 are such as to fit into the grooves whereas the spacing between the outer tips of the legs of the cross pieces 14 is larger than the width of the groove so that these tips will touch the side walls 4, 5 of the structural members whereby the cross pieces 14 are sraightened out as the respective legs glide along the side walls. The legs 10 rest snugly in a sealing manner against the moldings 8 of the box sections 6 and 7. Incidentally, these box sections may be firmly secured to the structural components 1 and 2 by means of anchor edges 15 as seen in FIG. 1. The just described installation actually involves snapping the lateral sealing strips 11 with the rails attached thereto into the grooves whereby the snap action is much like that of a snap button. This is a substantial advance in the art accomplished by the present invention.

Although the invention has been described with reference to specific example embodiments, it is intended to cover all modifications and equivalents within the scope of the appended claims.

What is claimed is:

1. In an elastic sealing device for sealing a gap between walls of adjacent structural members by means of lateral sealing strips interconnected by a bridging strip having longitudinal folds therein, wherein the improvement comprises each lateral strip with a wedge shaped contour whereby the cross sectional width of each lateral strip increases outwardly from said bridging strip, U-shaped rail means of rigid material having inwardly inclined legs and a land interconnecting said inwardly inclined legs, said lateral sealing strips being pressed with their wedge shaped contour into the space between said inwardly inclined legs, groove means in each of said structural members each of said groove means having an open face facing said gap, a respective box section secured in each of said groove means, each box section having inner side walls and molding means of angular section located along said inner side walls, said inwardly inclined legs having outwardly facing surfaces fitting against a respective one of said molding means.

2. The sealing device according to claim 1, further comprising a cross piece between each lateral strip and the bridging strip, said cross pieces extending to fit flush against the adjacent wall of said structural members on both sides of said bridging strip when said lateral strips are pressed into said groove means.

3. An elastic sealing device for sealing a gap between adjacent structural members comprising first and second lateral sealing strips, a bridging strip with longitudinal folds therein and interconnecting said lateral sealing strips, each of said lateral strips including a wedge shaped contour whereby the cross sectional width of each lateral strip increases outwardly from said bridging strip, and U-shaped rail means of rigid material having inwardly inclined legs as well as a land interconnecting said inwardly inclined legs, said lateral sealing strips being pressed with their wedge shaped contour into the space between said inwardly inclined legs of said rail means to form a structural unit, said sealing device further comprising two cross pieces one of which is arranged between each lateral strip and each end of said bridging strip, each cross piece having two legs one on each side of the bridging strip, said legs adjacent to the same lateral strip forming an acute angle prior to installation whereby the acute angles of the two cross pieces point toward each other.

4. The elastic sealing device according to claim 3, wherein said land interconnecting said inwardly inclined legs of said rail means have lateral edges which extend beyond said inclined legs.

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