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G. J. IRWIN

2,230,688

EXPANSION JOINT

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Fig-1

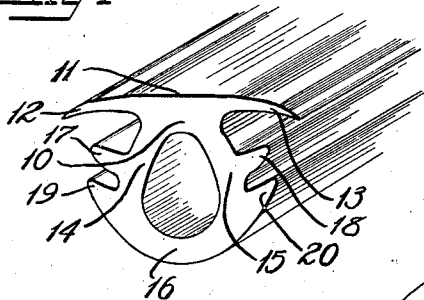


Fig-2

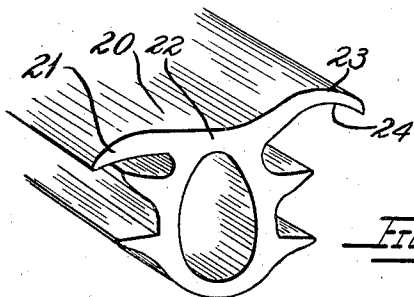
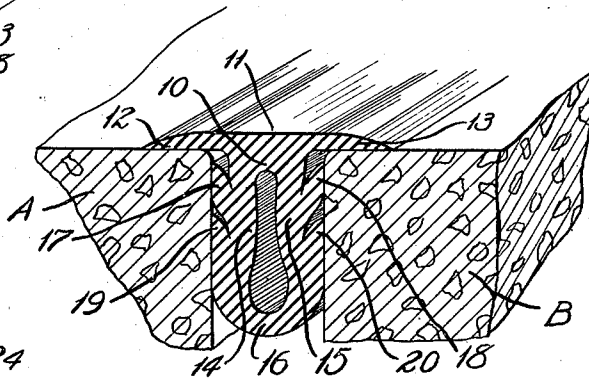


Fig-3

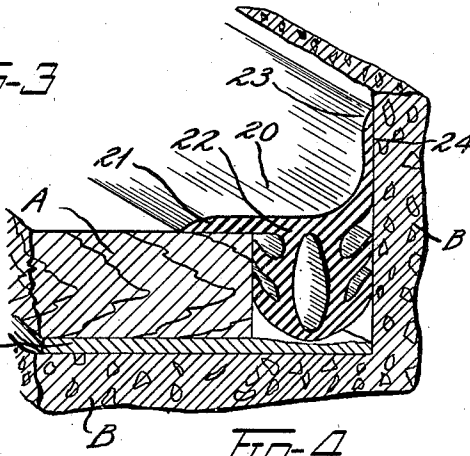


Fig-4

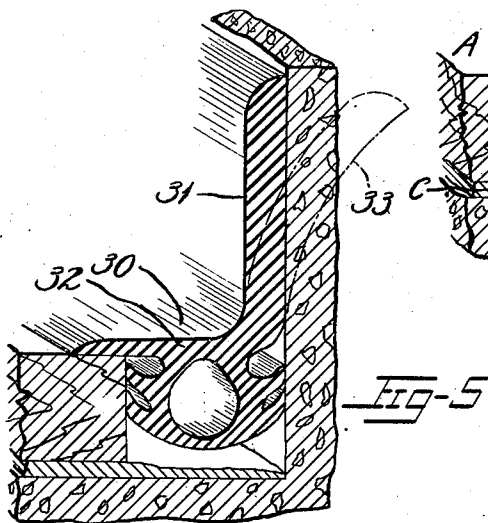


Fig-5

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UNITED STATES PATENT OFFICE

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EXPANSION JOINT

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5 Claims. (Cl. 94-18)

This invention relates to expansion joints and is useful especially in joints of flooring and pavements in which one or both of the jointed sections may be of concrete, wood, metal, composition, or any other suitable material.

It is desirable in some cases to provide both for sealing the joint against ingress of foreign matter and for coverage of the joint to avoid accumulation of the foreign matter upon the joint.

In the case of wooden floorings for buildings, it is usually necessary to space the margins of the flooring from the adjacent walls because of the variable expansion and contraction of the flooring with relation to the walls. In prior building practice it has been common to mount a base board and quarter-round strip on the wall adjacent the flooring to over-lie such space and resist entrance of moisture into the space. However, such base boards and strips necessarily have had to be mounted loosely with respect to the flooring and usually spaced somewhat from the flooring so that entrance of foreign matter into the space has not been completely prevented. Also, such construction, unless very carefully built, has often lacked attractive appearance, especially in buildings of inexpensive construction.

The chief objects of this invention are to provide for effectively sealing the joint and permitting contraction and expansion of the adjacent structures through wide ranges, to provide for simplicity in assembling the joint and to provide durability of construction and attractiveness of appearance.

More specifically, it is an object of the invention to provide a resilient sealing strip that can be readily inserted into the joint space but which will effectively resist return movement, in combination with means for covering the joint space. In the case of joints at the margins of building flooring, it is an object to provide for engaging both the floor and the wall by an element of the sealing structure in such a manner that the joint is at once sealed and covered in an attractive manner so that the use of base boards and trimming strips is unnecessary.

These and other objects will be apparent from the following description, reference being had to the accompanying drawing in which:

Fig. 1 is a perspective view of an end of a strip constructed according to and embodying the invention.

Fig. 2 is a cross-section in perspective of the

strip of Fig. 1 mounted in the joint space between two concrete sections.

Fig. 3 is a view like Fig. 1 but showing a modified construction suitable especially for sealing the expansion voids at the margins of flooring.

Fig. 4 is a cross-section showing the strip of Fig. 4 mounted in such an expansion void.

Fig. 5 is a view like Fig. 4 but showing a further modified construction.

Referring to the embodiment of Figs. 1 and 2, the sealing strip shown is adapted to be inserted into the joint space between two sections A and B of a concrete pavement or other structure. The strip which is of rubber or other resilient rubber-like material, comprises a lower body portion indicated generally at 10 and a covering portion 11 integral with the body. The covering portion 11 preferably is tapered at its margins or flanges 12 and 13, which margins may be downwardly curved somewhat so that close engagement of the margins with the pavement surface will be effected, although margins that extend with their under surfaces horizontally have been found to maintain their positions effectively also.

The body portion 10 comprises legs 14 and 15 which extend downwardly and diverge and are joined to the covering portion 11 in a relatively narrow neck portion as shown, so that when the body is inserted into a joint space of lesser width than the body portion the body portion will be compressed laterally and maintain resilient pressure against the walls of the space with little or no upward bulging of the covering portion 11. It is preferred to unite the legs by a downwardly curved bridging portion 16 so that a tubular strip is provided. By this construction effective resilient pressure against the walls is maintained throughout a wide range of contraction and expansion of the pavement sections. The diverging relation of the legs 14 and 15 also makes possible a toggle action of these legs in which each leg hinges about the zone of its juncture with the other leg and with the covering portion 11 and thus functions as a pawl to resist further downward movement of the strip in the joint space.

At the sides of the body portion are outwardly and upwardly projecting ribs 17, 18, 19, 20 integral with the body portion, which ribs preferably are tapered toward their outer ends so that when the strip has been inserted in the slot these ribs will be flexed resiliently against the walls of the space and will resist upward or return movement of the strip by virtue of the resilient pawl-

like action of these ribs against the walls of the joint space.

The proportions of the strip are such that when the strip is inserted in the manner illustrated in Fig. 2 the margins 12 and 13 of the cover portion will over-lie the pavement throughout a wide range of contraction and expansion of the layer. Effective sealing of the joint space is thus provided and at the same time the joint is effectively covered by the covering portion 11, the upper surface of which is raised only slightly above the pavement surface and presents only a very slight protuberance to pedestrian and vehicular traffic. The covering effectively prevents accumulation of foreign matter upon the sealing strip and serves rather to shed such matter. Owing to the toggle action of the legs 14 and 15, above referred to, downward pressure upon the covering portion 11 serves to increase the resistance of the strip to downward movement in the joint so that it is effectively held in place against movement in both the upward and downward directions.

This strip is suitable especially for use in factory floorings, the alleyways where light, steel-tired traffic moves over the joints, and also for sidewalks, private drives and the like where it is desired to protect the edges of the concrete from being chipped.

The embodiment of Figs. 3 and 4 is suitable especially for sealing the expansion voids at the margins of flooring in buildings and around columns, outlet boxes, etc. This strip not only permits expansion and contraction of the structures while it seals, but also covers the void and protects it against the ingress of foreign matter, and also serves ornamentally to finish the margin in lieu of base boards and trimming strips. The floor, which may be of wood, composition or other suitable material is indicated at A and the underlying base, which may be of concrete, is indicated at B. A layer C of bituminous or other suitable material underlies the flooring A to permit slippage of the floor upon the base during relative contraction and expansion. In the void between the flooring A and the wall B is inserted a sealing strip 20 which may be similar in construction to the strip of Fig. 1 except as to the covering element. One margin or flange 21 of the covering element 22 adapted to overlie the flooring A may be downwardly inclined for a lip-sealing action or it may be horizontal as in the case of the margins of the strip of Fig. 1, and the other margin 23 is upwardly inclined for tight sealing engagement with the wall B by a resilient lip action. To this end the margin 23 is formed with a concave under-surface 24, in Fig. 3, so that when the strip is inserted the margin 23 will be maintained resiliently pressed against the wall to the edge of the margin. Preferably this margin 23 and the margin 21 tapers to a fine edge so as to maintain close engagement with the wall and the flooring respectively. If desired, the margin 23 may be cemented or otherwise adhered to the wall because little or no movement occurs here, although such adhesion is not essential. To facilitate cleaning and to present an attractive surface the upper face of the strip is preferably concavely curved, as shown. By providing the strip with less depth than the void, and, as in the case of the first embodiment, because of the relatively narrow joining neck portion, bulging of the strip under lateral compression when the flooring expands, will be inward and downward

so that little or no distortion of the upper face of the strip will occur.

In the embodiment of Fig. 5 sealing strip 30 is like the strip of Fig. 4 except that its wall engaging margin 31 of the covering element 32 of the strip is extended upwardly to protect the lower part of the wall adjacent the floor in the manner of a base board. This strip is preferably formed so that before insertion the margin 31 is inclined and bowed as indicated by the broken line 33. Thus, when the strip is inserted, the margin 31 will be held flexed against the wall by a lip action and will maintain itself tightly in place with or without the use of an adhesive material.

Variations may be made without departing from the invention as it is defined in the following claims.

I claim:

1. A strip for sealing the expansion void in a pavement or flooring structure or the like wherein the walls of the void move extensively toward and away from one another during expansion and contraction of the structure, said strip being of resilient rubber-like material and comprising a covering portion having marginal flanges adapted to overlie face portions of the structure, a body portion united integrally with said covering portion intermediate the margins thereof and adapted to engage the walls of the void under lateral compression therebetween, the union between said covering and the body portions being provided by a neck portion relatively narrow as compared to said covering and body portions for accommodating flexure of said body portion itself against the wall of the void substantially without causing bulging of the covering portion when the strip is mounted with the body portion thereof under lateral compression in the void.

2. A strip for sealing the expansion void in a pavement or flooring structure or the like wherein the walls of the void move extensively toward and away from one another during expansion and contraction of the structure, said strip being of resilient rubber-like material and comprising a covering portion having marginal flanges adapted to overlie face portions of the structure, a tubular body portion united integrally with said covering portion intermediate the margins thereof and adapted to engage the walls of the void under lateral compression therebetween, the union between said covering and the body portions being provided by a neck portion relatively narrow as compared to said covering and body portions so that flexure of said wall of the tubular body against a wall of the void is accommodated substantially without causing bulging of the covering portion when the strip is mounted with the body portion thereof under lateral compression in the void.

3. A strip for sealing the expansion void in a pavement or flooring structure or the like wherein the walls of the void move extensively toward and away from one another during expansion and contraction of the structure, said strip being of resilient rubber-like material and comprising a covering portion having marginal flanges adapted to overlie face portions of the structure and a body portion united integrally with said covering portion intermediate the margins thereof in a neck portion relatively narrow as compared to said covering and body portions, said body portion being tubular with a wall thereof protruding laterally beyond said neck portion, and said body portion having ribs projecting laterally outward

from said wall of the tubular body so that flexure of said ribs against the walls of the void and flexure of said wall of the tubular body are accommodated substantially without causing bulging of the covering portion when the strip is mounted with the body portion thereof under lateral compression in the void.

4. A strip as defined in claim 3 in which one marginal flange of the covering portion is upturned to engage an upstanding surface.

5. A strip for sealing the expansion void in a pavement or flooring structure or the like wherein the walls of the void move extensively toward and away from one another during expansion

and contraction of the structure, said strip being of resilient rubber-like material and comprising a covering portion having marginal flanges adapted to overlie face portions of the structure and a body portion united integrally with said covering portion intermediate the margins thereof in a neck portion relatively narrow as compared to said covering and body portions, said body portion being tubular and having ribs projecting laterally outward from the walls thereof and inclined toward the level of said covering portion.

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