United States Patent

Weaver

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[54] PLASTIC GUTTER EXPANSION JOINT CONSTRUCTION

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[52] **U.S. Cl.** **61/14,** 52/11, 52/12

[51] **Int. Cl.** **E02b 9/04,** E04d 13/06

[58] **Field of Search** 61/14, 15; 52/11, 12, 13; 138/27, 28; 285/299, 300, 301

[56] **References Cited**

UNITED STATES PATENTS

3,213,627	10/1965	Blayden	61/15
2,931,669	4/1960	McDonald	285/299 X
3,355,895	12/1967	Bayes et al.	61/14
3,070,130	12/1962	Risley	285/300 X

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[57] **ABSTRACT**

A plastic gutter expansion joint construction comprising a pair of mutually supported telescopic rigid plastic gutter sections having overlapping ends and a flexible plastic expansion bellows extending between said sections therewithin and having opposite end portions bonded to said sections to provide a watertight expansion joint across the telescoping end portions of said sections.

4 Claims, 3 Drawing Figures

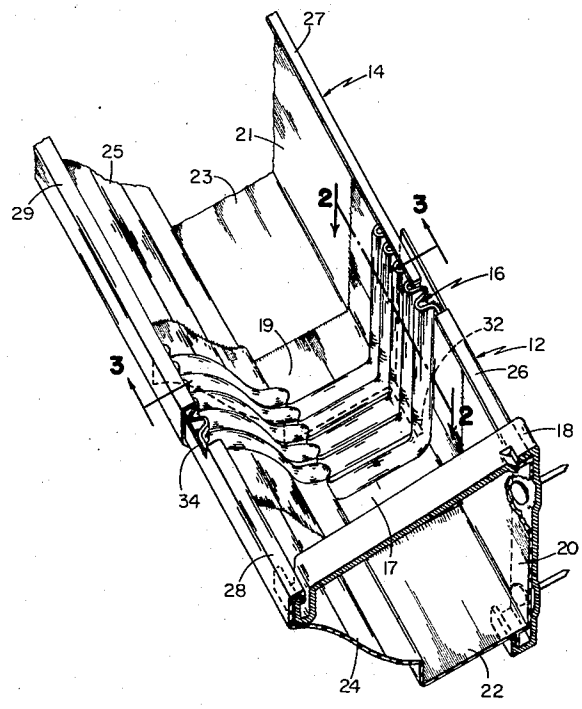


FIG. 1

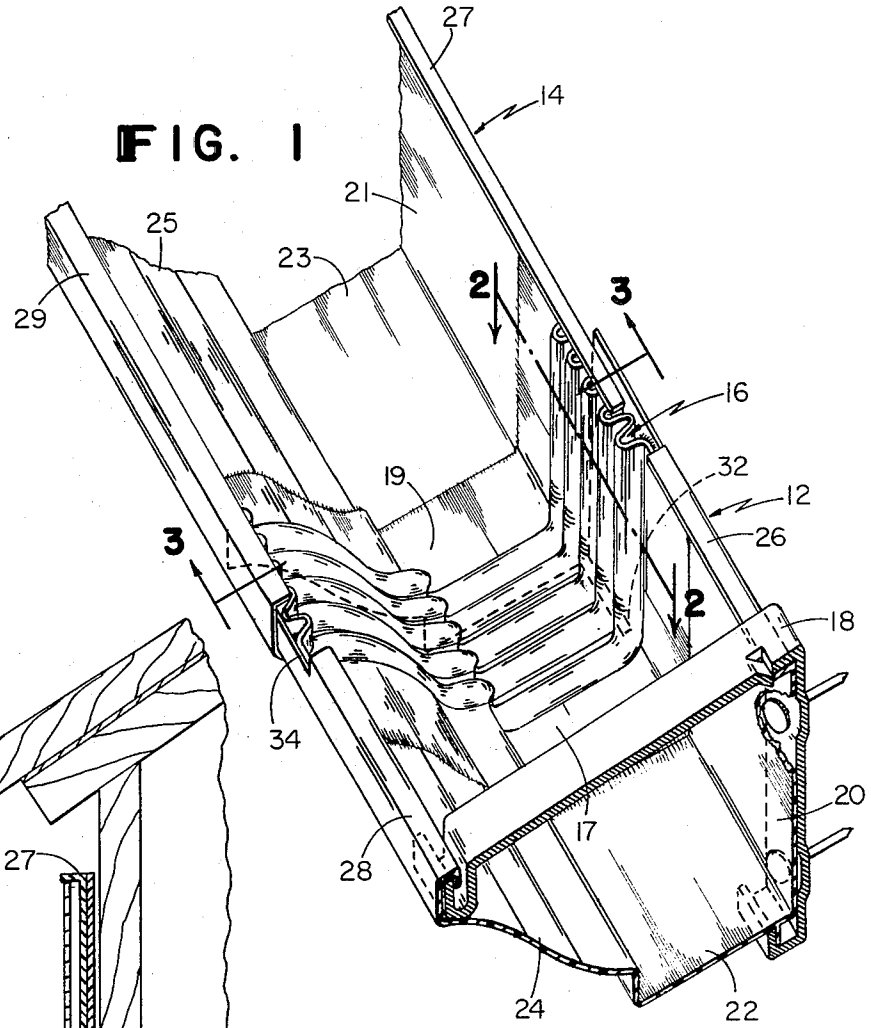
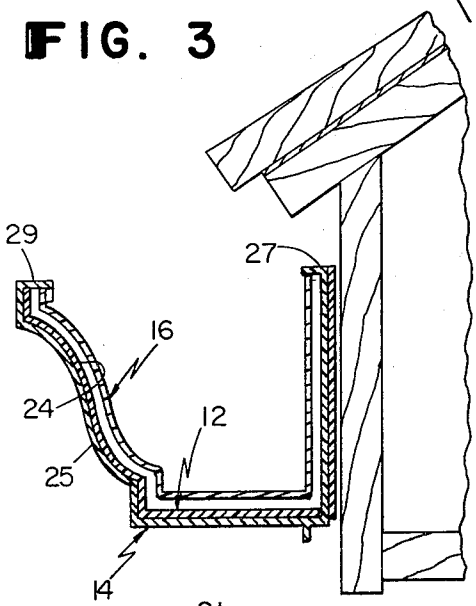


FIG. 3



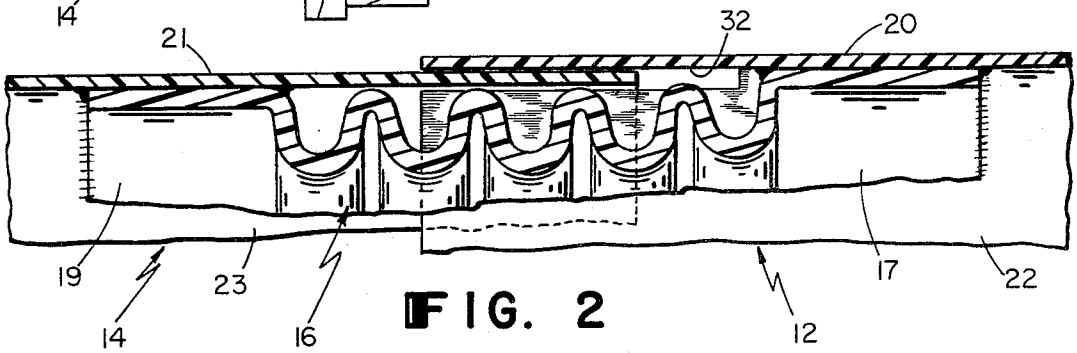


FIG. 2

PLASTIC GUTTER EXPANSION JOINT CONSTRUCTION

This invention relates to building construction materials and more particularly to a novel plastic gutter expansion joint construction.

Plastic building materials, such as siding and the like are coming into wide use as a substitute for wood by reason of their durability, appearance and decreased maintenance, since painting is not required. However, such plastic materials have at least one deficiency not present with wood, in that they expand and contract to a considerable extent as a result of changes in ambient temperature and hence are subject to unsightly buckling. The problems so created have generally been solved with units of relatively small dimensions, such as siding units, in part by providing slotted nailing openings and not nailing tightly so that the units are free to move to a limited extent and so do not buckle.

With units of large dimensions, however, the use of such slots and free nailing is not sufficient to allow for the necessary expansion, which may, for example, with a vinyl plastic amount to of the order of an inch in a 50 foot length, so that plastic units of such size have not heretofore been much used. For example, building construction elements such as gutters which must be both rigid and waterproof over relatively long lengths, have not heretofore been considered to be practical in plastic, even though they were known to be desirable, particularly in conjunction with the use of other plastic building materials.

Accordingly, it is a major object of the present invention to provide a practical plastic gutter both rigid and waterproof in the long lengths required.

This has been accomplished by providing a plastic gutter expansion joint construction comprising, in general, a pair of mutually supported telescopic first and second overlapping rigid plastic gutter sections having overlapping ends and a flexible plastic expansion bellows extending between said first and second sections therewithin, said bellows having opposite end portions each bonded to said first and second sections providing a watertight expansion joint across the telescoping end portions of said sections. More specifically, in order to provide mutual support in a construction wherein the gutter sections have identical cross section dimensions including a vertical rear wall, a bottom wall and a front wall having on its upper edge a flange extending generally horizontally toward said rear wall, the bottom and front walls of the second section lie outside of the bottom and front walls of the first section to support said first section by said second section against movement in a downward direction and the flange of the section section overlies the front wall of said first section to support said second section by said first section against movement in a downward direction. This may be accomplished by providing, in the first one of said sections, a first opening in the bottom wall adjacent the rear wall and a second opening in the front wall adjacent the flange with the rear wall of the second one of the sections passing through the first opening and the flange of the second section passing through the second opening.

For the purpose of more fully explaining the above and still further objects and features of the invention, reference is now made to the following detailed description of a preferred embodiment thereof, together with the accompanying drawings, wherein:

FIG. 1 is an isometric view of the plastic gutter expansion joint construction of the invention; and

FIGS. 2 and 3 are cross-sectional views of the construction of FIG. 1 taken on lines 2—2 and 3—3, respectively, of FIG. 1.

Referring to the drawings, the plastic gutter expansion joint construction of the invention includes a pair of rigid plastic gutter sections, generally designated **12** and **14**, with a flexible plastic bellows member, generally designated **16**, extending therebetween. Rigid vinyl may be used for gutter sections **12** and **14** and sufficiently flexible vinyl for bellows member **16**.

Gutter sections **12** and **14** have identical cross section dimensions and comprise vertical rear walls **20**, **21**, a flat or curved bottom wall **22**, **23** joined to said rear walls at the bottom edge thereof and front walls **24**, **25**. Rear walls **20**, **21** have on their upper edges flanges **26**, **27** extending generally horizontally toward said front walls and front walls **24**, **25** have on their upper edges flanges **28**, **29** having downwardly directed free edges, said flanges extending generally horizontally toward said rear wall. A bracket **18** may be provided for supporting the gutter sections.

Gutter sections **12**, **14** in order to provide mutual support for one another and so uniquely provide a rigid, telescoping expansion joint construction, have overlapping ends, with the rear wall **27** of gutter section **14** lying inside of the rear wall **26** of gutter section **12**, the bottom wall **23** and front wall **25** of gutter section **14** lying outside of the bottom wall **22** and front wall **24** of gutter section **12** to support gutter section **12** by gutter section **14** against movement in a downward direction and flange **29** of gutter section **14** overlying the front wall **24** of gutter section **12** to support gutter section **14** by gutter section **12** against movement in a downward direction.

In order to provide such overlapping mutually supporting configuration, gutter section **12** has an opening in the form of a slot **32** having a closed end in the bottom wall **22** extending from its terminal portion along rear wall **20** and an opening **34** with a closed end in front wall **24** adjacent flange **28**, said slot and opening permitting a substantial degree of axial telescoping sliding movement of gutter sections relatively to one another with said sections remaining overlapped in mutually self-supporting condition.

For providing the necessary watertight integrity of the above described sliding connection between the two sections, the invention provides a flexible vinyl expansion bellows member **16** of the general cross-sectional shape of gutter sections **12** and **14** extending between and overlapping said sections therewithin along their rear bottom and front walls, said bellows member having opposite flat end portions **17**, **19** bonded to the walls of sections **12** and **14**, respectively, by suitable cement, providing a watertight expansion joint across the telescoping end portions of said sections.

In use, it is simply necessary to nail a suitable series of brackets **18** to the building structure and then to a support thereon, as shown in FIG. **1**, a gutter including the expansion joint construction of the invention, the novel expansion joint of the invention providing a high degree of freedom of axial movement of the so-connected gutter sections as will occur due to ambient temperature changes, effectively preventing buckling thereof. At the same time, the novel rigid telescoping construction of the joint will prevent sagging thereat, as would otherwise occur.

What is claimed is:

1. A plastic gutter expansion joint construction comprising

a pair of mutually supported telescopic first and second overlapping rigid plastic gutter sections having adjacent overlapping ends

said gutter sections having substantially identical cross-sectional dimensions including a vertical rear wall, a bottom wall and a front wall having on its upper edge a flange extending generally horizontally toward said rear wall

said bottom and front walls of said second section lying outside of the bottom and front walls of said first section to support said first section by said second section against movement in a downward direction

said flange of said second section overlying the front wall of said first section to support said second section by said first section against movement in a downward direction to provide said mutual support and

a flexible plastic expansion bellows member of the general cross-sectional shape of said sections overlapping and extending between said first and second sections therewithin, said member having opposite end portions each bonded to said first and second sections providing a watertight expansion joint across the telescoping end portion of said sections.

2. A plastic gutter expansion joint construction as claimed in claim **1** wherein

said first one of said sections has

a first opening in said bottom wall adjacent said rear wall and a second opening in said front wall adjacent said flange with said rear wall of said second one of said sections passing through said first opening and

said flange of said second section passes through said second opening.

3. A plastic gutter expansion joint construction comprising

a pair of mutually supported telescopic first and second overlapping rigid plastic gutter sections having adjacent overlapping ends

said gutter sections having substantially identical cross-sectional dimensions including a vertical rear wall, a bottom wall and a front wall having on its upper edge a flange extending generally horizontally toward said rear wall

a first one of said sections having

a first opening in said bottom wall adjacent said rear wall and a second opening in said front wall adjacent said flange

said rear wall of said second one of said sections passing through said first opening

said bottom and front walls of said second section lying outside of the bottom and front walls of said first section to

support said first section by said second section against movement in a downward direction and

said flange of said second section passing through said second opening and overlying the front wall of said first section to support said second section by said first section against movement in a downward direction to provide said mutual support and

a flexible plastic expansion bellows member of the general cross-sectional shape of said sections overlapping and extending between said first and second sections therewithin along said rear, bottom and front walls, said member having opposite end portions each bonded to said first and second sections beyond said openings providing a watertight expansion joint across the telescoping end portions of said sections.

4. A plastic gutter expansion joint construction as claimed in claim 4 wherein

said gutter sections are of rigid vinyl and

said bellows member is of flexible vinyl cemented to said gutter sections.

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