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3,524,290

RECEIVER FOR SPLINE-TYPE GASKETS

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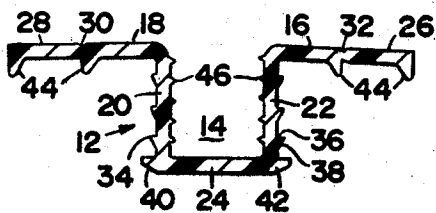


FIG. 1

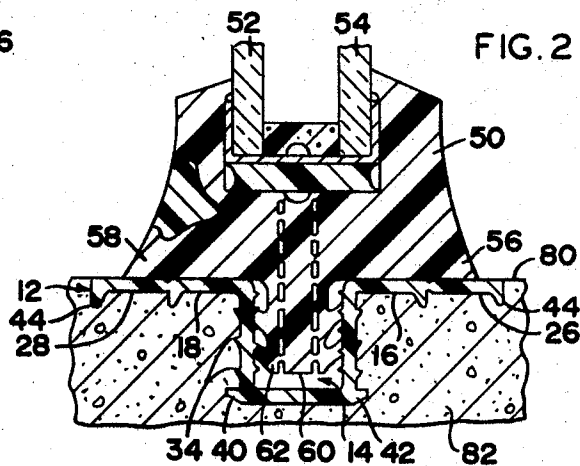


FIG. 2

FIG. 4

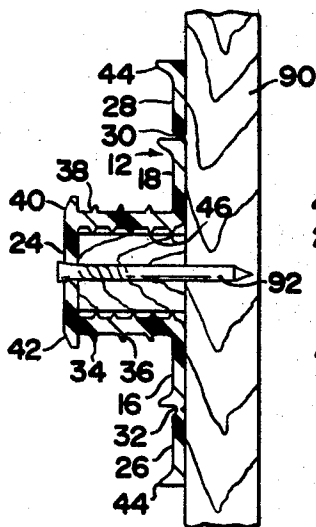


FIG. 5

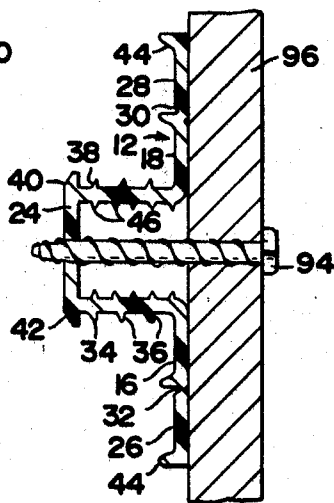
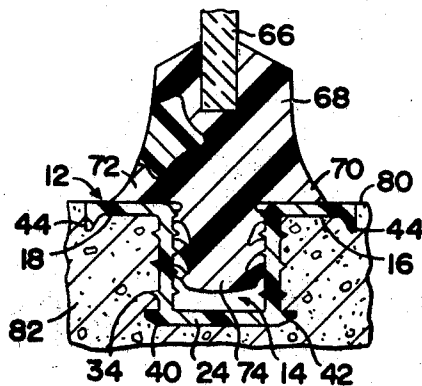
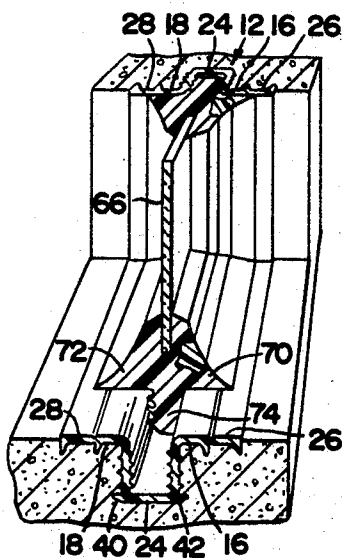


FIG. 3



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RECEIVER FOR SPLINE-TYPE GASKETS

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3 Claims

ABSTRACT OF THE DISCLOSURE

A sealing system for use with a concrete panel including a receiver of rigid thermoplastic material adapted to be cast into a surface of the concrete panel, the receiver having a channel portion receiving the tongue of a spline-type structural gasket. The receiver is provided with shoulder portions which extend laterally from the channel portion and which are in sealing engagement with side lips formed on the gasket. The shoulder portions of the receiver have longitudinally extending break-off portions so that the receiver can accommodate gaskets of varying widths.

The present invention relates to a sealing system for use with concrete panels, and in particular, to an improved receiver or reglet adapted for use with spline-type structural gaskets.

The Pat. No. 3,213,584, issued Oct. 26, 1965 to assignees of the present application, describes an improved resilient strip gasket structure having a self-retaining anchor or tongue portion which is insertable in a slot defined along a surface or edge of a concrete panel. The anchor or tongue portion is provided with flexible lateral projections which increase its resistance to removal from the panel slot, and in addition, is provided with lateral lip portions which are coextensive with the tongue portion and overlap the surfaces of the concrete panel which are adjacent to and along the sides of the slot. The anchor portion of the gasket is disposed within the slot as far as the gasket lips permit, and the lips preferably droop or are curved downwardly adjacent to their distal edges so that they are forceably and resiliently flattened down against the surfaces of the concrete panel which are adjacent to the slot, thereby sealing the gasket with the concrete panel.

In Pat. No. 3,213,584, the spline type gasket is shown as seated in a channel which is molded in the surface of a concrete panel, and alternatively in a metal U-shaped insert which is embedded or recessed into the concrete panel or window frame.

The problem is that generally with concrete structural members, it is conventional practice to sand blast or acid wash the concrete surface after manufacture. With the structural gaskets seated directly in a slot formed in a concrete panel surface, or in a metal receiver, said blasting and acid washing is likely to pit the surface which is overlapped by the gasket lips preventing the formation of an effective or uniform seal between the panel and gasket.

The above disadvantages are overcome in accordance with the present invention by providing a sealing system for use with concrete panels and gaskets of the tongue-in-groove type comprising a receiver of rigid thermoplastic material adapted to be cast into a surface of the concrete panel, the receiver having a center channel portion and longitudinally extending shoulder portions integral with the channel portion and on opposite sides thereof. The shoulder portions include longitudinally extending break-off strip portions coextensive with the channel and shoulder portions. A reduced thickness area connects the break-off strip portions with the shoulder portions

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and facilitates separation of the break-off portions from the receiver proper. In this way gaskets of varying widths can be accommodated.

The shoulders of rigid thermoplastic material provide continuous smooth surfaces which are in sealing engagement with the lip portions of a gasket, and a surface which is unaffected by sand blasting or acid washing. In addition, the present invention provides a design by which a manufacturer need stock only a single width reglet or receiver for all ordinary applications and conditions.

The invention and advantages thereof will become apparent upon consideration of the following specification, with reference to the accompanying drawings, in which

FIG. 1 is a cross section view of a reglet or receiver in accordance with the concepts of the invention;

FIG. 2 is a cross section view of a building structure assembly illustrating the use of the reglet or receiver of FIG. 1;

FIG. 3 is an illustration of use of the reglet or receiver of FIG. 1 with a narrower width gasket than that of FIG. 2;

FIGS. 4, 5 and 6 illustrate methods for manufacture of the structural assembly of FIGS. 2 and 3; and

FIG. 7 is a perspective view of the assembly of FIG. 3 illustrating the concepts of the invention.

Referring to the drawings, and in particular, FIG. 1, the reglet or receiver 12 is made of a rigid thermoplastic material, such as rigid polyvinyl chloride. There are two types of polyvinyl chloride, flexible and rigid, the flexible polyvinyl chloride having incorporated in it a suitable plasticizer. In the present instance, it is preferred that no plasticizer be used for several reasons. For one, it will be shown that the reglet or receiver is embedded in a concrete surface. There is no adhesion between concrete and a vinyl material so that projections on the outside of the receiver or reglet are required to retain the reglet in the concrete. A rigid thermoplastic material offers better retention properties in that the retaining projections are more rigid. In addition, when a plasticizer is used with polyvinyl chloride, the weatherability of the vinyl is reduced by virtue of ultraviolet and ozone degradation. The absence of a plasticizer improves weatherability of the reglet or receiver.

A suitable vinyl is Geon (a registered trademark of B. F. Goodrich Company) rigid polyvinyl chloride, although other vinyl materials can be used, as well as other thermoplastic resins having the same general properties as rigid polyvinyl chloride.

With reference to FIG. 1, the reglet or receiver is extruded into continuous long strips having a channel portion or channel 14 and laterally extending shoulders or shoulder portions 16 and 18 on opposite sides of the channel coextensive with the channel. The channel 14 is provided with opposite side walls 20 and 22 and a bottom wall 24, defining an essentially U-shape configuration. The shoulders 16 and 18 are integrally formed with the side walls 20 and 22, and are substantially at right angles thereto. Extending laterally further from the channel and as part of the shoulders 16 and 18 are break-off longitudinally extending strips or tabs 26 and 28. These break-off strips are coextensive with the channel 14, or shoulders 16 and 18, and are connected to the shoulders by areas 30 and 32 of reduced thickness. The areas 30 and 32 are sufficiently thick so that the break-off strips 26 and 28 remain connected to the shoulders 16 and 18 during normal use and handling, but can be readily disengaged from the shoulders by hand if desired. Instead of areas 30 and 32 of reduced thickness, the extruded receiver can be provided with perforated areas along the lines of separation between the break-off strips and the shoulders.

As illustrated in FIG. 1, the walls 20 and 22 of the channel of the receiver are provided with exterior projections 34 at spaced elevations along the walls. Although the spacing of the projections 34, and their configuration, are somewhat arbitrary, their purpose is to hold the receiver or reglet as cast in a surface of a cement body, and it has been found that the spacing and configuration shown is preferred and highly efficient or satisfactory in its retention properties. As shown, the configuration of each projection provides a flat upper surface 36, and a beveled lower side 38. The flat upper surface 36, referring to FIGS. 2 and 3, prevents movement of the receiver or reglet out of the cement body (82), whereas the beveled lower sides provide a support or stiffening structure for the flat upper surface. The projections 34 extend along the walls 20 and 22, are coextensive with the walls, and are disposed at three equally spaced elevations along the walls.

In addition to the projections 34, the bottom wall 24 is extended beyond the side walls 20 and 22 by what can be termed bottom wall extensions or wings 40 and 42, also coextensive with the walls 20 and 22. As shown, the extensions or wings 40 and 42 extend beyond the walls 20 and 22 a distance further than the projections 34 providing more flat retaining upper surface to prevent separation of the bottom wall 24 of the receiver from the concrete panel. To stiffen the projections 40 and 42 the bottom distal edges of these projections are beveled similar to the beveling of projections 34.

Extending downwardly from the distal edges of the shoulders 16 and 18 and also from the distal edges of the break-off strips 26 and 28, are projections 44 which serve to hold the reglet or receiver shoulders and break-off strips in their cast position in the surface of the concrete panel (FIGS. 2 and 3). The receiver is extruded such that if the break-off strips 26 and 28 are removed, a projection 44 remains integral with each shoulder 16 and 18 to insure that the shoulder will be held in position. If desired, these downwardly extending portions 44 can have an extruded configuration in which the portions are oriented inwardly towards the walls 20 and 22, to provide even greater holding or retention properties.

On the inner surfaces of the walls 20 and 22 of the channel 14 of the reglet or receiver, the walls are provided with inwardly extending projections 46, at spaced elevations on the walls, which as will be shown, help to retain a gasket member tongue or anchor portion within the reglet or receiver channel.

Turning to FIG. 2, there is illustrated a spline-type or tongue-in-groove type structural gasket 50 for a double pane glass window, panes 52 and 54. The gasket 50 is provided with a tongue portion or spline 60 which is received by the channel portion 14 of the reglet or receiver, and the tongue is provided with lateral extensions 62 which engage the projections 46 on the inside surfaces of the walls 20 and 22 of the receiver. An example of this type of gasket is shown in the Bush Pat. No. 3,213,584, mentioned above. Because of the double pane construction, the gasket 50 has a substantial width, with the lips 56 and 58 on opposite sides of the gasket overlapping the break-off tab or strips 26 and 28 as well as the shoulder portions 16 and 18 of the reglet or receiver. It is apparent that the sealing contact between the gasket and receiver is between the lips 56 and 58 and the break-off strips 26 and 28.

FIG. 3 illustrates the invention for use with a single pane window, item 6. In this instance, the gasket 68 can be of lesser width than the gasket 50 of FIG. 2, because of the single pane construction, and the lips 70 and 72 which extend longitudinally on opposite sides of the spline 74 overlap only the shoulder portions 16 and 18 of the reglet or receiver. For this reason, the break-off strips 26 and 28 are not required, and are noticeably absent in the assembly of FIG. 3.

FIGS. 2 and 3 show the reglets or receivers embedded in the surface 80 of a concrete body 82, with the exposed surfaces of the shoulders 16 and 18, and break-

off strips 26 and 28, flush with the surface 80 of the cement body 82. To achieve this construction, the reglets or receivers are cast in place along with casting of the concrete, and FIGS. 4, 5 and 6 show alternative methods by which this is accomplished. In FIG. 4, the reglet is nailed to a suitable wood form 90, by means of nails 92. Following setting of the cement or concrete, and removal of the form 90, the nails 92 are cut-off or pulled out. In the case of the FIG. 5 embodiment, the reglets are screw held to a suitable form 96 by lag screws 94, and following casting, the lag screws are simply unscrewed or removed from the reglet. In the FIG. 6 embodiment, metal forms 98 are used, between which is clamped a wood block 100. Following casting, the nails 102 would be pulled from the reglet with removal of the form 98, 100.

FIG. 7 illustrates a window assembly in accordance with the invention, and certain advantages of the invention. It should be noted that in the FIG. 7 embodiment, even though a single window pane is involved, the lip portions 70 and 72 of the gasket are wide enough to overlap the break-off strips 26 and 28 of the receiver. Different manufacturers will supply gaskets which are differently dimensioned. As an advantage of the present invention, a contractor need supply or have on hand only one dimensioned receiver or reglet for use with various types of gaskets, from different manufacturers, or for single or double pane windows. In addition, FIG. 7 points up the advantage of the invention with respect to the construction of corners. To make a corner, the receiver strips are beveled at the ends adjacent the corners and the end making up the corners are brought into contiguous relationship with each other. The corners are then simply heat sealed by fusing together the ends of the thermoplastic strips. Alternatively, the corners can be radiused by heating and formed to the desired shape. If desired a sealant can then be flowed over the corner joints. The above procedure also is available for joints made along flat expanses between corners.

The advantages of the present invention over a system involving a direct gasket to concrete installation should be obvious. In particular, the concrete is usually subjected to acid washing or sand blasting, and the pitted surface is not suitable for effective sealing with the lip portions of a gasket. The same disadvantages are experienced when metal receivers are used.

By the use of receiver shoulders and break-off strips or tab portions of a thermoplastic material resistant to acid washing and sand blasting, there is always provided a smooth sealing surface for contact with the gasket lips, regardless of the width or construction of the gasket involved. In addition, polyvinyl chloride is not effected by corrosive atmospheres, gases, or materials present in the concrete. Polyvinyl chloride does not strain concrete or surrounding materials, is a non-conductor of electricity, and is not subject to attack by ground currents. Costly coatings and repairs are avoided. In addition, polyvinyl chloride is an excellent material in the present application in that it withstand the impact of hard blows, shocks or vibrations, and does not support combustion.

The following table gives physical properties of the reglet or receiver preferred in accordance with the present invention.

TABLE.—PHYSICAL PROPERTY REQUIREMENTS OF REGLET

Property	Test method	Preferred requirements
Tensile.....	ASTM-D-638	5,500 p.s.i./min. at 78° F. 10,000 p.s.i./min. at 40° F. 3,000 p.s.i./min. at 140° F.
Izod impact.....	ASTM-D-256	15 ft.-lb./in. notch min. at 78° F.
Modulus (tension).....	ASTM-D-638	340,000 p.s.i./min.
Flexural strength.....	ASTM-D-650	11,000 p.s.i./min.
Specific gravity.....		1.35±0.02
Hardness Durometer Shore D.....		78±3.

Although the invention has been described with respect to specific embodiments, variations within the scope of

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the following claims will be apparent to those skilled in the art.

What is claimed is:

1. In a sealing joint of the type including an elongated receiver member having a cross-sectional shape defined by a substantially U-shaped open central channel portion and a pair of shoulder portions extending laterally outward from said channel portion, said channel portion receiving a portion of a resilient gasket therein and said gasket having lips sealingly engaged with said shoulders, the improvement comprising; said receiver member having shoulder portions which include lateral break-off strips integrally formed therewith at the outer extremities thereof, said shoulder portions having weakened portions formed therein to define said break-off strips, said receiver being of thermoplastic material compounded to break at said weakened portions upon application of manual bending force to said break-off strips so that said break-off strips are selectively separable from said receiver to vary the lateral extent of said shoulder to correspond to the width of the lips of a particular gasket.

2. The receiver of claim 1 wherein said shoulder portions have bottom surfaces and further including integral projections extending downwardly from said bottom surfaces on both sides of said weakened portions.

3. An elongated receiver member for tongue-in-groove type structural gaskets, said receiver member having a cross-sectional shape defined by a substantially U-shaped open central channel portion including a bottom wall and spaced-apart sidewalls extending upwardly from said bottom wall, said sidewalls having upper end portions spaced upwardly from said bottom wall, shoulders means formed integrally with each of said sidewalls and extending laterally outward in opposite directions from said upper end portions of said sidewalls, said shoulder means having outer end portions, said shoulder means having weakened portions formed therein intermediate said outer end portions thereof and said upper end portions of said sidewalls to divide said shoulder means into inner shoulder

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portions positioned adjacent said sidewalls and outer break-off strips positioned outwardly from said sidewalls, said shoulder means having bottom surfaces and including integral projections extending downwardly therefrom at said shoulder portions and said break-off strips on opposite sides of said weakened portions, said shoulder means having upper surfaces for sealingly engaging with sealing lip means on resilient gasket means, and said receiver member being formed of thermoplastic material compounded to break at said weakened portions upon application of manual bending force to said break-off strips so that said break-off strips are selectively separable from said shoulder portions for varying the lateral extent of said upper surfaces of said shoulder means whereby gaskets having lips of different lateral dimensions are accommodated by said receiver member.

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U.S. Cl. X.R.

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